



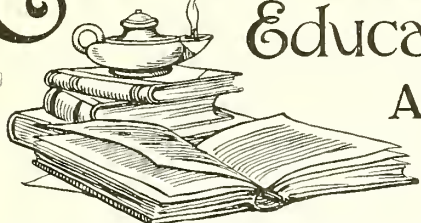
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THE CHEMIST & DRUGGIST

Educational Number

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at Home and Abroad.

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Educational Matters

are the feature of this issue. We have dealt with the subject comprehensively, but concisely, so that students who desire to take up a career in pharmacy or the allied professions can form an accurate idea of the extent of the knowledge required of candidates (pp. 53 to 74).

In the introductory section we deal with the preliminary requirements, devoting most space to the Preliminary examinations, certificates of which are accepted by the Pharmaceutical Society (pp. 53 and 54).

We next deal with the Minor and Major examinations of the Pharmaceutical Society of Great Britain, and give the experience of successful candidates at these examinations. This is followed by the syllabus of the various examinations conducted by the Irish Society and the schools where instruction can be obtained (pp. 55 to 61).

The diplomas and degrees in medicine and surgery, with the experience of an Edinburgh graduate, are given on pp. 61 to 66, and on the last-named page begins the dental section. Veterinary surgery is dealt with on p. 68, and the Science section begins on p. 69.

Summary.

The more notable items only are dealt with.

The National Insurance Bill

is suspended till the autumn Session of Parliament.

We give notes regarding the discussion on Clauses 16 and 17 (p. 46), and a *résumé* of the work done so far is given on p. 51.

In an editorial article we discuss the problem involved in the institution of a new qualification for dispensing assistants (p. 50).

"Xrayser II." also refers to this, and comments on the discussion on Clause 14, which, he states, cannot fail to have a wide-reaching effect on the public mind to the advantage of chemists (p. 49).

Articles and News.

An abstract of the by-laws of the Alberta Pharmaceutical Association is printed on p. 40.

Portraits of the Fairchild scholar and the Pereira medallist for this year are given on p. 45.

Mr. R. S. Starkie, the proprietor of two well-known pharmacies in the Strand, London, died on August 4 (p. 44).

The hot weather has given "Xrayser II." an opportunity of referring to the quaint receipts for meads and metheglins given by Sir Kenelm Digby (p. 49).

A successful reception and *conversazione* in connection with the British Dental Association took place at the Royal College of Surgeons, London, on August 4 (p. 35).

The Portsmouth Conference is brought to mind by two group-photographs on pp. 34 and 37, and a poetic reference to Mr. Harrison's paper on proprietary medicines (p. 52).

The Council-meeting of the Pharmaceutical Society of Ireland, which was to have been held on August 2, was postponed on account of the absence of a quorum of members (p. 36).

In the series of articles on oxidation and reduction in chemical analysis, reducing-agents are dealt with. These include ferric salts, arsenates, chromates, chlorates, hypochlorites, nitrates, nitrites, sulphites, and thiosulphates (p. 34).

Trade and Market Matters.

Further interesting letters regarding the Mitcham herb-crops are published on p. 77. As the result of drought, the total yield of peppermint oil is likely to be one of the smallest on record (p. 75).

Business has been considerably interfered with by the dock strike and holidays this week, market changes being few. Ammonia sulphate, naphthas, and American peppermint oil are higher; old-crop chamomiles, coconut oil, orange oil, and valerian are firmer. Chiretta is easier (p. 75).

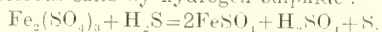
CORNER FOR STUDENTS.

Conducted by Leonard Dobbin, Ph.D.

Oxidation and Reduction in Chemical Analysis.—VI.

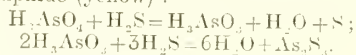
REDUCING AGENTS.—1. Hydrogen sulphide.—This most valuable and, indeed, indispensable reagent is usually brought to the notice of the analytical student primarily as a precipitant for those metals which form sulphides that are insoluble, or nearly so, in cold and moderately dilute mineral acids—*i.e.*, for the metals of the copper and arsenium groups. It is not infrequently permitted to introduce itself to his notice in its action as a reducing agent towards various substances in acid solutions, and it does this in a manner which is often troublesome and under circumstances which sometimes lead to confusion. It is on the addition of hydrogen sulphide to the hydrochloric-acid solution in the routine examination for metals of the copper and arsenium groups that the chief reducing effects of this reagent in analytical work take place, and it is the simultaneous precipitation of sulphur, which almost always occurs, that is often the cause of trouble and sometimes of confusion to the beginner. These reducing effects are due to the readiness with which the hydrogen of the hydrogen sulphide is oxidised, in the presence of easily reducible substances, to form water. The sulphur, being much less easily oxidised than the hydrogen, either escapes oxidation altogether or only a small proportion of it is oxidised with the formation of sulphuric acid. Sulphur precipitated in this way may, in the absence of copper- and arsenium-group metals, be the only precipitate obtained, or in the presence of such metals it may be precipitated along with one or more of the precipitable sulphides. When precipitated alone, it is generally white or nearly so, although in some cases it is distinctly yellow-coloured, and as a rule it is precipitated in so very fine a state of division that it is almost impossible to remove it completely by filtration. The following substances oxidise hydrogen sulphide more or less rapidly when the latter is added in the ordinary course of qualitative analysis to hydrochloric-acid solutions containing them.

a. Ferric salts.—As already stated in article I., in connection with reduction in general, ferric salts are reduced to ferrous salts by hydrogen sulphide:



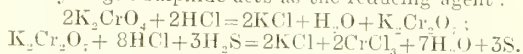
The reduction is accompanied by the precipitation of nearly white sulphur and by a change in the colour of the solution from brown or yellow to pale green or almost colourless.

b. Arsenates.—Solutions of arsenic acid or of arsenates to which hydrochloric acid has been added oxidise hydrogen sulphide slowly in the cold, more rapidly on heating, with the formation of arsenious acid and of a precipitate of sulphur (white or nearly so), the former of which, with more hydrogen sulphide, gives a further precipitate of arsenious sulphide (yellow):



(See also article VII., 6.)

c. Chromates.—In order that a chromate may be reduced to a chromic salt, besides the reducing agent an acid must usually be present to supply the necessary acid-radical for the chromic salt. The hydrochloric acid added as a group-reagent (which first converts the chromate into a bichromate) can furnish this requisite, while the subsequently added hydrogen sulphide acts as the reducing agent:

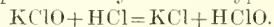


The orange bichromate solution changes to a green solution of chromic chloride, and a white precipitate of sulphur separates. This change of colour of the solution is highly characteristic. Seen through the green liquid, the white sulphur appears green, and this appearance is responsible for its being incorrectly described, occasionally, as a green precipitate.

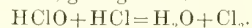
d. Chlorates.—Dilute hydrochloric acid when warmed with solutions of chlorates gradually liberates euchlorine,

a mixture of chlorine and chlorine peroxide. When hydrogen sulphide is added to a solution which has been treated thus, a slight precipitate of sulphur is formed. (See *c* below.)

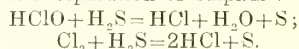
e. Hypochlorites.—When mixed with hydrochloric acid, solutions of hypochlorites yield free hypochlorous acid:



If excess of hydrochloric acid is added it interacts with the hypochlorous acid, giving water and chlorine:



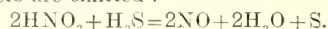
Both hypochlorous acid and chlorine interact with hydrogen sulphide with separation of sulphur:



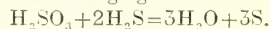
Hence the addition of hydrochloric acid and hydrogen sulphide to a hypochlorite results, in any case, in the precipitation of sulphur.

f. Nitrates.—Free nitric acid, even when dilute, and also nitrates in presence of hydrochloric acid, are oxidising substances which precipitate sulphur from hydrogen sulphide. The rapidity with which the reduction of the nitric acid proceeds depends upon the temperature and the concentration of the solutions. In cold moderately dilute solutions, no separation of sulphur may take place within five minutes or more, but in the routine of qualitative analysis it is nevertheless desirable to avoid, as far as possible, the presence of nitric acid and of nitrates in solutions which are to be treated with hydrogen sulphide.

g. Nitrites.—When hydrochloric acid is added to a solution of a nitrite, nitrous acid is liberated. This rapidly oxidises hydrogen sulphide with separation of sulphur, which is often yellow and is, on this account, sometimes mistaken for arsenious or cadmium sulphide when confirmatory tests are omitted:



h. Sulphites.—In presence of hydrochloric acid, solutions of sulphites yield sulphurous acid, upon which hydrogen sulphide acts as a reducing agent:



It is of interest to note that sulphurous acid which itself often acts as a reducing agent, taking up oxygen to form sulphuric acid, here acts as an oxidising agent, giving up its oxygen and becoming reduced to sulphur. The sulphur which separates comes two-thirds from the hydrogen sulphide and one-third from the sulphite. It is nearly white.

i. Thiosulphates.—When hydrochloric acid is added to a solution of a thiosulphate, thiosulphuric acid, $\text{H}_2\text{S}_2\text{O}_3$, is liberated, but this acid is unstable and breaks up into sulphurous acid and sulphur. The sulphurous acid produced interacts with hydrogen sulphide as in *h*, above, and yields a further precipitate of sulphur.



A GROUP OF ISLE OF WIGHT PHARMACISTS, with Mr. W. F. Wells and Mr. T. A. White, taken at Carisbrooke Castle on July 27.

[Photo Cleworth.]

ENGLISH AND WELSH NEWS.

When sending newspapers to the Editor please mark the items of news to which you desire to call his attention.

Brevities.

The Macclesfield Town Council on August 2 renewed the poison-licence held by Mr. David Hanna, florist, The Market Place.

Messrs. F. W. Hampshire & Co., manufacturing chemists, Derby, have taken a factory in Abbey Street, Ilkeston, as a branch to their present business.

Plans for alterations to the premises of Boots, Ltd., in Market Street, Crewe, and Wellington Street, Aldershot, have been passed by the respective local authorities.

Mr. W. H. Younghusband, chemist and druggist, has bought the premises at 14 King Street, Wigton, which he formerly leased. He intends to alter them so as to reside there.

Fifteen Newcastle boys were made ill last week through eating laburnum-seeds at Axwell Park, where the Shieldfield Mission had taken them for their annual picnic. About twelve of them were detained overnight at the Newcastle Infirmary, but all are expected to recover.

The annual sweet pea and carnation show of the Horticultural Society formed by the employes of Messrs. Ferris & Co., Bristol, was held at the firm's Union Street premises recently. The judge (Mr. A. H. Sage, F.R.H.S., London Parent Society) expressed himself as very pleased with the exhibits.

The premises of Mr. W. H. Hampton, chemist, 86 Northgate, Gloucester, were entered by burglars last week. The intruders entered a bedroom and stole a pair of trousers in which were the keys of the safe and 14s. in money. From the safe 15l. or 16l. was taken, and from the shop till about 25s. The burglars departed, leaving the keys in the safe.

At a Folkestone inquest on August 9, it was stated that Mrs. Louisa Morrison Wood, the wife of Mr. William Henry Wood, of 16 Friar Stile Road, Richmond, manager of a firm of wholesale chemists in the City, accidentally fell from a window at 21 Trinity Gardens, Folkestone, while waving good-bye to her husband. She died from injuries caused by the fall.

At Wolverhampton, during the inquiry into the death of Louisa Studham, night superintendent at the West Bromwich Infirmary, it was stated that the doctor who attended her considered that death was due to morphine-poisoning. No trace of poison was found in deceased's room, but she would in the course of her duties have access to poisons. The inquiry was adjourned for an analysis of the internal organs.

Mr. Kenneth V. Norman, son of Mr. Valentine Norman, chemist and druggist, High Street, Godalming, was successful in rescuing a boy from drowning in the River Wey at Godalming last week. Young Norman, who is a member of the Wey Swimming and Rowing Club, effected the rescue under great difficulty, as the boy seized his rescuer by the neck, and it appeared possible that there would be a double fatality, as both went under the water twice. Mr. Norman was warmly commended for his action.

At Tottenham on August 3, during the inquest held on Amelia Parkinson Briggs (28), the wife of a chemist of Highworth Road, New Southgate, Dr. Spilsbury gave evidence of the presence of wounds internally, which he thought were caused before death by a sharp-pointed instrument. There could be only one reason for using such an instrument, and that was to procure abortion. The witness considered that the instrument could not have been used by the deceased. The inquiry was adjourned for a fortnight.

The annual report for 1909 of the inspector under the Inebriates Acts states it is highly probable that 97 to 98 per cent. of all persons who become habitual drunkards die drunkards or become inmates of workhouses, prisons, or asylums. It is pointed out, further, that so far as the constitutional peculiarity is concerned, "there is no evidence to show that any method known to us can be trusted to eradicate it, or even modify its power to any

material extent. Long-continued abstinence gives the best chance; but it is doubtful whether even this results in great benefit."

British Dental Association.

In connection with the annual meeting of this Association, which took place last week in London, a very successful *conversazione* was held at the Royal College of Surgeons on August 4. The guests were received by Sir H. T. Butlin, President of the College, and Mr. W. B. Paterson, President of the Association. There were provided for the guests a concert in the lecture-theatre, a display of epiadscope pictures in the large hall, and refreshments in the library, but the *pièce de résistance* was undoubtedly the museum. The museum upon which something like 500,000l. has been spent contains 63,000 specimens, and consists of five separate rooms, to which has been added recently the odontological collection formed by the Odontological Society, now merged in the Royal Society of Medicine. The collection is arranged in a systematic manner so as to assist students and others who are engaged in studying any particular branch of anatomy, pathology, etc. There are several interesting historical specimens, such as the body of Mrs. Van Butchell, wife of the famous Georgian quack, surgical instruments of olden times, preparations obtained from the body of Napoleon the Great, and the anatomical plates which John Evelyn had made at Padua in 1646. In one of the libraries was a display of albums of newspaper-cuttings, two of these being of advertisements of proprietary medicines in the eighteenth century, and another referring to body-snatching cases.

Trade with Brazil.

The Brazilian sub-section of the London Chamber of Commerce has presented a petition to his Excellency the Brazilian Minister relative to the practice of undervaluing and misdescribing goods shipped to Brazilian ports. The petition points out that the practice is a growing one, and is detrimental to the legitimate interests of those merchants who refuse to undervalue or misdescribe goods exported from the United Kingdom to Brazil. The petitioners ask that such steps should be taken as may be found possible to repress the practice. The Minister has made a communication on the subject to the Federal Government.

Birmingham Notes.

Business is in a very unsettled state owing to the holidays, and many pharmacists are working short-handed or have placed their cares in the hands of a "locum" for the usual week or ten days.

The phenomenal heat of the past few weeks has been a great help to pharmacy in preparations and apparatus for making cooling beverages. In spite of the missing soda-water fountain the public's many needs have been met.

Professor Jordan Lloyd, in his address on the Ritual and Expense of Modern Surgery before the British Medical Association, said soap and scalding water are our safest and simplest antiseptics, and if spirit is added to the list the scruples of the most sensitive of surgeons should be satisfied. Linen straight from the laundry costs but little and is all sufficient. Gauze can be purchased for a penny a yard, silk for 3d. per skein, clean cotton-wool for less than a shilling per lb., and bandages for a few coppers each.

A quantity of radium-salt, weighing a few grains, but worth 125l., was missed after an operation at the General Hospital. The radium was the property of Southall Bros. & Barclay, Birmingham, who loaned it to a well-known specialist at the General Hospital. A most diligent search was made. Rubbish-bins were sifted and every possible hiding-place ransacked, a reward of 5l. being offered for its discovery. Eventually it was found that the patient had inadvertently put the pill-box containing the valuable salt in his pocket. Subsequently finding it in his possession he had utilised it for an amateur experiment upon himself, with the result, it is said, that he has contracted a serious facial injury.

Contracts.

Cleckheaton Urban Council.—The Killgerm Co., Ltd., Cleckheaton, for the year's disinfectants.

Twickenham Urban District Council.—Mr. A. Feather, chemist, Twickenham, for 240 gals. of carbolic soluble fluid (containing not less than 15 per cent. carbolic acid and about 50 per cent. carbolic and allied acids) at 1s. 2d. per gal.; also 1 ton of Corporation powder (guaranteed equal to 25 per cent. pure carbolic acid) at 5l. per ton.

Bradford City Council.—For chemicals and apparatus required by the Technical College and School of Art Subcommittee for the session 1911-12: Baird & Tatlock, "R" glass, 7l. 18s. 9d.; A. Gallenkamp & Co., ordinary glass 55l. 4s. 6d., and porcelain 7l. 13s. 10d.; Harrison & Parkinson, general apparatus 50l. 6s. 8d., chemicals 5l. 10s. 7d., acids 15l. 16s. 8d., and platinum 5l.

Sale of Food and Drugs Acts.

The Salford analyst (Mr. J. Carter Bell) reported on 211 samples last quarter, and in no case was there evidence of adulteration.

The Rochdale analyst (Mr. T. Stenhouse) states, in his quarterly report, that the ten drug-samples examined were all satisfactory.

The report of the Sheffield City analyst (Mr. G. E. Scott Smith) for the quarter ended June 30 shows that a total number of 151 samples were examined. Of seven samples of pepper, five were genuine and two were each adulterated with 30 per cent. of rice-flour. Four out of seven samples of sweet spirit of nitre were genuine, the others containing respectively only one third, four-sevenths, and three-fifths of the minimum proportion of ethyl nitrite. Four samples of ground ginger, four of compound liquorice-powder, three of camphorated oil, all proved to be genuine.

Fires.

A fire broke out at the Derby Street works of Messrs. Joseph Brooks & Co., Ltd., chemists and wholesale druggists, Shudehill and Thomas Street, Manchester, late on August 8. It was an hour before the flames were extinguished, considerable damage being caused by fire and water. The damage is covered by insurance.

Damage estimated at about 10,000l. was caused by a fire which broke out on the morning of August 7 at the works of Messrs. Herbert N. Morris & Co., manufacturing chemists, Miles Street, West Gorton, Manchester. The outbreak occurred in a brick and wooden structure in the centre of the works, used chiefly for the manufacture of vitriol. Men were drawn from five of the city fire-stations, and with a plentiful supply of water the flames were prevented from extending to the adjoining buildings, in which were stored large quantities of aniline. This building was practically gutted. The damage is covered by insurance.

Auction of Chemist's Stock.

The sale by auction of the stock of the late Mr. J. R. Tibbits, Central Drive, Blackpool, took place on August 3. Prices for sundries and "patents" in many cases equalled retail charges, but a few good lines were spotted by the professionals. An animated discussion between the auctioneer and a chemist took place, when a few boxes of belladonna-plasters were put up, as to the legality or otherwise of selling poisons by auction, the auctioneer contending that his licence covered him. Being the height of the season, the attendance of local chemists was very meagre, these probably thinking that they could make more by attending to business. Our correspondent's experience proved that they were right.

From Various Courts.

At Penge on August 7 Charles Forden (47), fireman, Catford, was committed for trial on a charge of stealing perfume, etc. (value 5s.), the property of McClinton, Ltd., Donaghmore, Ireland, from the Irish Village, Crystal Palace.

At Westminster on August 9 the Sheppy Glue and Chemical Works Co., Ltd., 34 Mark Lane, London, E.C., were fined 5l. and costs for not removing objectionable refuse in proper receptacles. The prosecution was in reference to a cart laden with bags of bones, etc., which passed along Regency Street, Westminster, on a hot afternoon last month.

Athletics.

Sunderland v. Newcastle Chemists.—Teams drawn from the chemists of these two towns met in friendly contest on the cricket field at Westlands Ground, Sunderland, on August 6. Mr. Elliott, Heaton, captained the Newcastle side and Mr. R. C. Thursfield the Sunderland team. Sunderland, who batted first, were disposed of for 52 runs, while the Newcastle pill-men knocked up a score of 76. The return fixture at Newcastle will take place on September 5.

Morson's London Offices v. Ponders End Works.—This cricket match was played on the ground adjoining Summerfield Chemical Works, Ponders End, on August 5, and resulted in an easy win for the Elm Street contingent. Scores: Elm Street, 140 for 6 (declared); Works, 16 and 47. For the winners Mr. G. E. Chiles played a not-out innings of 73. The teams were afterwards entertained to tea by the firm in the hotel close to the ground, where an enjoyable impromptu concert was afterwards held.

The two principal events at the annual meeting of the Anerley Bicycle Club, held at the Crystal Palace on August Bank Holiday, were the races for the "Lasso" and "Lightning" cups, trophies valued at fifty guineas each, presented by Messrs. Edward Cook & Co., Ltd., the soap specialists, Bow, E. The first is a three-mile "devil-take-the-hindmost" race, and it was won a second time by Mr. E. F. Ryan, of the Polytechnic Club. The "Lightning" cup competition is a twenty-five-mile scratch race, and Mr. H. E. Dunn (Polytechnic Club) was declared the winner after an exciting struggle.

IRISH NEWS.

When sending newspapers to the Editor please mark the items of news to which you desire to call his attention.

Pharmaceutical Society of Ireland.

The monthly meeting of the Council of the Pharmaceutical Society of Ireland was summoned to be held at 67 Lower Mount Street, Dublin, on August 2. Only six members attended—Messrs. D. M. Watson (Vice-President), G. D. Beggs, John Burnett, W. F. Wells, Thomas Batt, and Thomas N. Moffitt. These being insufficient to constitute a quorum, which is fixed at seven, the business of the agenda was not entered on.

Brevities.

The meeting of the debenture-holders and unsecured creditors of Messrs. John Clarke & Co., Ltd., wholesale druggists, Corporation Street, Belfast, ordered by the Master of the Rolls, will be held on August 17 in the Chamber of Commerce, Belfast.

At the monthly meeting of the Board of Management of the Belfast and Ulster Vintners' Association last week, the Secretary reported that complaints had been made to him in various towns regarding the use of methylated spirit as an intoxicant. The opinion was expressed that the authorities are to blame for not enforcing the regulations.

Personal.

Dr. J. C. McWalter, Ph.C., has been appointed Deputy-Governor of the Apothecaries' Hall of Ireland.

Mr. James Corcoran, Ph.C., Dublin, has been appointed Teacher of Pharmacy to the Technical Schools in that city at a remuneration of 5s. an hour, two hours twice a week.

Mr. John McBirney, Ph.C., M.R.C.V.S., Rathfriland, acted as an honorary veterinary surgeon at the Banbridge Show on July 25. Mr. McBirney also acted in a similar capacity at the Newry Show.

Mr. F. Anderson, Ph.C., the Harcourt Pharmacy, 57 Harcourt Street, Dublin, has been appointed dispenser to the newly opened Skin and Cancer Hospital, Hume Street, Dublin, at which hospital Dr. W. J. Healy, Ph.C., has been appointed anaesthetist and Dr. Robert M. Bronte, Ph.C., pathologist.

Prior to sailing from Belfast for Canada on August 4, Miss Minnie Fisher was presented with a purse of sovereigns by her colleagues on the staff of Messrs. W. & G. Baird, Ltd., Royal Avenue, Belfast. Miss Fisher goes to the Dominion to become the bride of Mr. George McCormick, druggist, who emigrated two years ago to Macleod, Alberta.

Public Drug-supply.

The co. Tipperary Infirmary Committee have accepted the tender of Messrs. Boileau & Boyd, Dublin, for the supply of medicines to the infirmary at 15 per cent. discount. The other firm tendering were Messrs. Sumner & Co., Liverpool, at 20 per cent. The Committee, by five votes to four, decided to give the contract to an Irish firm.

Messrs. Boileau & Boyd, drug-contractors to the Tullamore Union, have intimated to the Board of Guardians that they know nothing about a bill of costs furnished them by Messrs. Hoey & Durning on behalf of the Guardians. They state that they have had over a hundred similar bond transactions to complete. There is no need to employ legal assistance in this matter, and they decline to pay for it.

The Medical Charities Committee of Belfast Board of Guardians presented a report on August 8 with reference to the supply of medicines. The Committee were informed by the compounders that the medicines ordered at the first Board-meeting in each month are intended for use during that month, so that considerable inconvenience is caused when medicines are not supplied punctually. It was recommended that Messrs. Boileau & Boyd, Dublin, contractors for the supply of medicines, be informed of the inconvenience caused by delay in supplying medicines. It was also recommended that the contractors be requested to send medicines, etc., packed in as small packages as possible, as the large casks in which medicines have been received have been found to be inconvenient at some of the dispensaries where they have to be retained for some period. It was agreed that the attention of the analyst (Mr. R. F. Blake) be drawn to the colour, smell, and unsatisfactory appearance of the cod-liver oil and turpentine, samples of which were reported upon as being "of standard quality." The analyst is also to be informed that it is absolutely essential that the results of analyses should be furnished punctually in future, as the Committee find in the case of the last two samples of medicines which were reported upon as being deficient in quality, the supplies had been used up in the workhouse before the analyst's report was received.



A WELL-KNOWN CONFERENCE TRIO.

Mr. R. A. Robinson, D.L., and Mr. F. Ransom and Mr. T. H. W. Idris (ex-Presidents).

[Photo Cleworth.]

DR. SZENDEFFY'S treatment for tuberculosis by means of "radio-active menthol iodine" is put on the market as "Dioradin Preparation No. 3."

SCOTTISH NEWS.

When sending newspapers to the Editor please mark the items of news to which you desire to call his attention.

Brevities.

Mr. Carmichael, chemist and druggist, Kinglassie, has removed into larger premises.

A petition to the Dunfermline Co-operative Society, in favour of the institution of a chemist's co-operative shop at Crossgates, Fifeshire, is being signed. The petition points out that there is no qualified chemist in the district, with a population of about 5,000.

The "West Lothian Courier" of August 4 states that it is believed that funds would be speedily forthcoming in support of a suggestion made that a statue should be erected on the Cross Square, Linlithgow, in memory of Dr. David Waldie, a native of Linlithgow, who first discovered the "anæsthetic properties of chloroform."

The case of alleged slander brought by Mr. Edward Gordon, chemist, Kelty, against Dr. Sanjana, for 500*l.* damages, which was dismissed on appeal, with expenses against pursuer, was recalled last week, when Dr. Sanjana claimed that the expenses covered copying notes of evidence, etc. The auditor disallowed these, but Sheriff Umpherston, on appeal, allowed 6*l.* for a portion of them. A further appeal by defender to the Sheriff-Principal has resulted in 21*l.* being allowed against pursuer for copying notes of evidence, etc.

Edinburgh.

If the present almost tropical heat is going to be part of the Scottish summer, it will be necessary to add special formulæ for ointments to the next edition of the British Pharmacopœia. Some of the ointments, especially those prepared with lard, are not unlike thick cream emulsions nowadays.

The Edinburgh University authorities have obtained the necessary sanction to confer a diploma in psychiatry or mental diseases (Dipl. Psych.) after one year's study of three academic terms. These new regulations have now been adjusted, and come into force in October. The course is open to all registered medical practitioners.

Sometimes the truth is none the less the truth in that it is spoken without due regard for thoughtful wariness. "This has been the quietest Monday I've had for a fortnight," said a local chemist to one of his assistants this week. "Same here, sir!" remarked the trusty employé, who had just resumed work after his annual holiday.

A case of laburnum-poisoning has brought "laburnum-pod danger" to the fore again in the local Press. A "Dispatch" correspondent suggests that, after flowering, the city gardeners should label the tree "Poison." In addition, he stated that only children who have been reared in large towns seem to be tempted to eat the pods.

Glasgow.

Fire broke out on Monday morning in the oil-works of Messrs. Williamson, Morton & Co., Dobbies Loan, causing damage estimated at 1,000*l.*

Mr. Archibald McNaught, chemist, has opened a "Beauty" department at his new premises in Renfield Street, Glasgow. This venture is superintended by a lady assistant, who gives advice, and incidentally prevails upon customers to purchase some particular "aid to beauty" toilet-preparation.

Glasgow University Court has been notified that the ordinance relating to the new medical chairs at the Royal Infirmary has been approved by his Majesty in Council. The various elective bodies will now appoint curators to the patronage of the respective chairs, which it is hoped will be duly filled, and the new professors at work by the start of the winter session.

THE "Daily Mail" correspondent at Victoria (B.C.) reports that a sperm whale captured off the west coast of Vancouver Island has been found to contain 250 lb. of ambergris.

FRENCH NEWS.

(From the "C. & D." Paris Correspondent.)

PERSONAL.—Monsieur Jean Amic (of Messrs. Roure-Bertrand fils, of Grasse) has been elected to the Senate.

THE RED CROSS.—The use of the Red Cross (and even of the expression "Red Cross") was subjected to certain restrictions by the International Convention signed at Geneva in 1906. A French "interministerial" committee at present sitting is drafting a law which would give this article of the Convention legal sanction in France, and prevent the Red Cross from being used—as it is now frequently, by wholesale houses—as a distinctive mark for bandages, cotton-wool, and other "first-aid" goods. The matter is being followed with interest by the Wholesale Druggists' Association.

THE "TEN DAYS' TRIAL" SYSTEM, which is in vogue here, has the force of law, as is borne out by a recent decision of the Council of Prud'hommes—mixed tribunals of masters and men who decide small wages disputes. An assistant, having been dismissed without notice by a pharmacist after a few days' employment, sued the employer for 10% damages. The pharmacist pleaded that the custom of the Parisian trade, in the absence of any written contract, is to consider the first ten days as a trial period, during which the assistant could either leave or be dismissed without giving or receiving notice. The judgment stated that both parties recognised that this was the "constant usage at Paris." The pharmacist had written to the assistant to come and help as "extra" on the next Sunday, but on the Monday sent him a note to say his services were no longer required. The Council held that this view was entirely correct, and that the pharmacist only owed the three days during which the assistant might have held himself free for his service, the day he actually worked (Sunday) being already paid for.

WHERE RADIUM WAS DISCOVERED.—The Paris Municipal School of Industrial Physics and Chemistry, once lodged in the old buildings of the Collège Rollin, is now gradually being rebuilt. The laboratories of physics now occupy the corner site at the angle of the Rue Lhomond and the Rue Vauquelin, and new laboratories of analytical chemistry are now about to be constructed. These latest additions entailed the destruction of the most ignoble, yet most famous portion of the school-buildings—the wretched shed which sheltered for so many years Pierre Curie and his devoted collaborator. The tumble-down structure is now nearly demolished; the half-stripped roof showing the screens of planking which served to protect M. and Mme. Curie more or less from the inclemency of the winters while they indefatigably pursued their analyses of uranium ore. A "Rue Pierre Curie" now exists—a handsome new thoroughfare which leads from the recently inaugurated Oceanographic Institute to the Rue d'Ulm. The Rue d'Ulm is the site of Pasteur's first laboratory; but what is perhaps less generally known is that he had a second laboratory in the ex-"Collège Rollin" already mentioned, where, surrounded by his pupils, he studied the diseases of domestic animals. The Municipal Council had granted him the use of some gardens and outbuildings, and there he kept glandered horses, mad dogs, and sheep attacked by anthrax. It was in a shed close to the Rue Vauquelin that Professor Grancher, Dr. Roux, and Dr. Chamberland performed the first antirabic inoculation, and it was in the great conventual building at the end of the garden that Joseph Meister, the little Alsatian bitten by a mad dog and inoculated by Pasteur, was lodged.

INSECTS IN PHARMACY.—M. Bouquet's article on this subject ("La France Médicale") mentions that burnt bees in powder or pomade were used as a hair-restorer: Guyon recommended that they be mixed with snails, leeches, and salt for this purpose. Wasps were supposed to serve the same object, and besides rivalling beetles as diuretics, etc. Crickets were aperitive, and the humble "Norfolk Howard" (bedbug) swallowed in a garlic-pod was a remedy for quartan ague, and had many other therapeutical uses. For children, fleas might be substituted as easier

to swallow. Flies distilled in water and mingled with yolk of egg produced an ophthalmic medicament, but Marcellin (1335) gives us a still simpler prescription. "First catch your fly, hold him in the left hand, repeat the name of the ophthalmic patient, then place the still living insect in a linen bag and tie it round the sufferer's neck." The silkworm moth was used for the famous "English drops" (gouttes d'Angleterre), and caterpillars snuff (*i.e.*, the insects burnt and powdered) stopped bleeding at the nose.

SOUTH AFRICAN NEWS.

(From "C. & D." Correspondents.)

"The Chemist and Druggist" is regularly supplied by order to all the members of the seven Societies and Associations of Chemists in British South Africa, as well as to other chemists in business there.

Cape Province.

DISINFECTANTS IN SOUTH AFRICA is the subject of a special report by the American Consul at Port Elizabeth. He states that most of the disinfectants imported are of English manufacture, the imports into the Union during 1909 being valued at \$126,047, which sum increased to \$142,073 in 1910. The share of the United States in this trade was \$4,808 and \$6,857 for these years respectively. The Consul quotes prices for the fluids, powders, and pastes in the various forms, and adds: "There is an Austrian brand of powder on the market sold in cases of eight tins containing 14 lb. at \$23.72 per case. For manufacturers' prices deduct 40 per cent. Fluids and powders manufactured in England and admitted free of duty appear to have the call. The duty for foreign countries is only 3 per cent. *ad valorem*, and with a direct line of steamers to South Africa it should be possible to obtain some of this trade."

Natal.

MR. KNOTT, of Messrs. Turner & Co., Maritzburg, was successful in passing the qualifying examination on July 6. There were two candidates.

WHALE-OIL GLYCERIN.—In reporting the recent abandonment of the manufacture of glycerin from whale oil (full particulars of which have appeared in the *C. & D.*) the American Consul at Durban believes it may be possible for American dealers who have failed to obtain whale oil in the past from Durban to secure shipments now.

CHEMISTS' BALL.—The first annual ball of the Pietermaritzburg Chemists' Assistants' Association was held on July 5, at the Masonic Hall, when between some fifty and sixty couples assembled. The hostess of the evening was Mrs. W. Cook, wife of the President of the Association. The dance committee was composed of the following: Messrs. W. Cook, G. Davidson, H. Murray, R. I. Johnson, D. Hadden, G. Valentine, T. H. Nott, G. Cook, and H. H. Henwood. The task of M.C.s was ably carried out by Messrs. A. Murray, P. S. Johnson, G. Valentine, and H. H. Henwood, much of the success of the dance being due to the latter gentleman.

Orange Free State.

MEDICAL AND PHARMACY COUNCIL.—The Medical and Pharmacy Council met on July 14. There were present: Drs. Pretorius, Tomory, and Usmar, Mr. Whiteside (dentist), and Mr. Fowle (chemist and druggist). There being no President, Dr. Tomory was elected Chairman. The following examiners were appointed for the Chemists' and Druggists' examination: Prescriptions, Drs. Pretorius and Usmar; pharmacy (oral), practical pharmacy and dispensing, and materia medica, Messrs. Francis Carter (pharmaceutical chemist *Gt. Brit.*, 1879) and Alexander Fowle (chemist and druggist *Gt. Brit.*, 1900); chemistry and physics and practical chemistry, Mr. Lyle and Professor Rudge; botany, Professor Potts. Only one candidate had intimated his intention of sitting for the examination, the date of which was fixed for August 23 and 24. The acting Under-Secretary for the Interior had forwarded copy of a letter written by the Government Analyst of the O.F.S., which was to the effect that the writer had submitted to toxicological examination, at the instance of the police, some coated tablets

the ingestion of which had nearly resulted in death. The tablets had been found to contain half a grain of pure arsenious oxide, together with sulphide or arsenic free sulphur, and a trace of caustic soda. There was also an added danger that the pills might be substituted by mistake for a proprietary medicine known as "Cooper's Pills," which was harmless. As the Council had on a previous occasion given it as their opinion that these arsenical tablets could only be lawfully sold by registered chemists, except in sparsely populated areas where general dealers are allowed by the law on the certificate of a magistrate to sell certain poisons, provided that there is no chemist's shop within six miles, the letter was merely accepted for information.

BEFORE THE SUPREME COURT (O.F.S. Provincial Division) at Bloemfontein on July 11, Dr. J. W. Krause, of Bloemfontein, petitioned for an order authorising the Resident Magistrate of Hoopstad to issue a licence to allow him to practise as a medical practitioner with the right to practise as a chemist and druggist. It appeared from the petition that a licence had been issued by the magistrate on July 21, 1910, as a chemist and druggist, and to keep open shop as such, but the petitioner had been refused a licence for his shop on January 21, 1911, on the ground that he had lost the privilege of taking out such a licence. Petitioner had been in practice at Bloemfontein prior to the passing of the Medical and Pharmacy Ordinance (No. 1 of 1904), and had kept open shop as a chemist and druggist in terms of Article 6 of chap. xcvi. of the Law Book, which law was repealed by the Ordinance of 1904. Since the coming into operation of the Ordinance, petitioner had continued to practise as a medical practitioner and chemist and druggist till August 1909, when he went to Hoopstad and started practising there. Petitioner claimed that in accordance with the provisions of Sections 12 and 38 of Ordinance 1 of 1904 and Schedule C of Ordinance 10 of 1903 (the Stamps and Licences Ordinance) he was entitled to practise as a chemist and druggist and to keep open shop. The material portion of Section 38 reads as follows:

"Every medical practitioner shall be entitled to practise as an accoucheur and may compound and dispense medicines, but shall not be allowed to keep open shop as a chemist and druggist: Provided that any medical practitioner so established on the day before the taking effect of this Ordinance shall not be required by anything herein contained to close such establishment."

Lengthy legal arguments followed on each side, and in the course of his judgment, dismissing the application, Judge Fawkes said that prior to 1903 medical practitioners had undoubtedly the right to keep an open apothecary's shop. In that year the Stamps and Licences Ordinance limited that right, and there was an attempt in that law to deprive medical practitioners of vested rights. The section they had to construe is Section 38 of Ordinance 1 of 1904. That section clearly prohibits medical practitioners from keeping an open druggist's shop. But there is a proviso. Now the word "established" used in that proviso must refer to the keeping of an open shop as a chemist and druggist, and under that proviso no medical practitioner is required to close "such establishment"—in other words, he is not required to close the open chemist's shop which was open at the date of the coming into operation of Ordinance 1 of 1904. The proviso merely refers to the shop which was open at the time this Ordinance came into operation. This seems to be the only grammatical reading one can apply to this section, and the meaning and intention of the legislation appears to be clear. It is that this section shall not operate to oblige medical practitioners who had actually got premises open as chemist's shops to close down their establishments. In this case the medical practitioner had closed his shop and had gone to Hoopstad. He thought it would be impossible to say that the shop opened at Hoopstad could be said to be an establishment open and existing on the date of coming into operation of the Ordinance.

Rhodesia.

TRADE BOOM.—A Salisbury correspondent informs us that trade is very brisk at this centre, the township having been rebuilt within the last year or so with modern shops.

AUSTRALASIAN NEWS.

"The Chemist and Druggist" is regularly supplied by order to all the members of nine Societies of Chemists in Australia and New Zealand, as well as to other Chemists in business there.

The Commonwealth.

INDUSTRIAL SPIRITS.—By a general Order the standard of industrial spirit is now fixed. The spirit before methylation is to be of a strength not less than 65° overproof, and is to be methylated by the addition of 2 per cent. of wood-naphtha, $\frac{1}{2}$ per cent. of pyridine, and $\frac{1}{2}$ per cent. of coal-tar naphtha.

"THE AUSTRALIAN PHARMACEUTICAL FORMULARY."—The desire to secure the co-operation of all the States has led to a disaster in connection with this book. The fire that took place on June 26 at Sydney, at the premises of Fuerth & Nall, destroyed the whole of the copy that had been prepared by Mr. R. C. Cowley, Secretary of the Australian Pharmaceutical Conference. At the Conference Mr. H. W. Shillinglaw was appointed publisher of the book and the manuscript was sent to him. He obtained prices in Melbourne. The Pharmaceutical Society of New South Wales expressed a desire to obtain prices in Sydney, and the matter had been in their hands for five weeks, when the fire took place.

New South Wales.

A PHARMACY ACT AMENDING BILL has been introduced into the House of Representatives. This is the Bill which was drafted by the Pharmacy Board several years ago, and has been before Parliament on many occasions, always to be included in the "slaughter of the innocents" at the end of the Session. Mr. Carmichael explained that the Bill was intended to do justice to certain men who were out of the State when registration was granted. About a dozen were affected, some of whom were at the South African war at the time when they could have secured registration. The Bill would give the Pharmacy Board power to register those men if it thought fit. The Board was in favour of the Bill. The Bill also gave the Board greater latitude with regard to the subjects to be passed in the Preliminary examination. Mr. F. S. Thomas stated that a man in Sydney went to South Africa and sent his papers and application from that country. They were all in order, but he failed to send along 14. for registration. He arrived in New South Wales two days too late to register. A provision also gives the Pharmacy Board to require more than three subjects needed at present for the Preliminary examination. The Bill was made an order of the day, with the second reading for June 14.

MR. C. J. CARROLL was entertained to dinner on May 29 by the members of the Council of the Pharmaceutical Society, previous to his departure on a visit to England. The Mayor of Manly presided, and representatives of the drug-houses were present, Mr. A. Forster (Registrar of the Pharmacy Board), several doctors, Mr. H. S. Brothwood, and quite a long list of Manly men. Dr. Thomas, in proposing the health of the guest, said that Mr. Carroll's professional brethren had given the ultimate judgment upon his career. He had been a member of the Pharmacy Board for many years, and is now its President. He is a member of the Council, and had been President of the Pharmaceutical Society of New South Wales. No profession repeatedly returns as its representatives men in whom they have no respect or confidence. During the evening Mr. Carroll was presented, on behalf of the company, with a case of silver-mounted pipes and a tobacco-pouch, suitably inscribed.

New Zealand.

RECIPROCITY with Australia in the matter of pharmaceutical diplomas has now become possible, an overwhelming vote having been given by the registered pharmacists of New Zealand in favour of its establishment. The Pharmacy Board in this case has not asked the general body of registered pharmacists to decide the basis on which reciprocity is to be established, but is negotiating in each case. The number of young New Zealanders who go to Australia seeking admission to the rank of pharmacy is rather surprising; no fewer than fifteen are said to be

waiting in New South Wales. The only New South Wales chemist who was in New Zealand, Mr. Kohn, died last year. Correspondence has been going on for many years on this matter, and the files of the Pharmacy Board of New Zealand should show what basis is proposed.

SHARLAND & CO., LTD., held their annual meeting on May 27. After making provision for bad and doubtful debts and depreciation, the net profits for the year amounted to 6,760/., including 289/., carried forward. A dividend of 7½ per cent. was recommended, amounting to 4,350/., 2,000/., to be paid to the reserve fund, and the balance of 1,409/., to be carried forward. The Chairman, in moving the adoption of the report and balance-sheet, said that business had increased considerably during the year, the increase amounting to 13,522/., in turnover, with an increase in expenditure of 1,375/., or 10 per cent. on the increased turnover. The stock in hand had increased 1,750/.. The company have decided to build new premises in Dixon Street, where a property has been secured for 5,000/.. The building to be erected will cost from 8,000/., to 10,000/.

DEMERARA DOINGS.

SMART-DALGLEISH FOOTBALL CLUB.—Nine matches played since the formation, several months ago, of this football club in connection with Messrs. Smart-Dalglish & Co., Ltd., Georgetown, Demerara, have resulted in six draws, two wins, and one defeat. The last match against the Colony's crack team, that of the Artillery Sports Club, which ended in a victory for the Smart-Dalglish combination by one goal, was the first played in the club's colours (royal blue and white). We reproduce a photograph of the team which came into being through the firm granting early closing on Saturdays some time ago, so that employes could take the exercise so essential in the tropics. Mr. J. D. Smart-Dalglish, the President of the team, has contributed greatly to the club's success. The Vice-Presidents are Messrs. A. J. Collier and A. H. Napper.



SMART-DALGLEISH FOOTBALL CLUB.

Back Row: Messrs. Levy, McRostie, Mendonca, Bailey, Roberts, Thomas, and Hutchison.

Middle Row: Messrs. Collier, Smart-Dalglish, McCowan, Napper, and Ross.

Front Row: Messrs. Hardy, Margach, Roach, and Braggins.

Mr. R. H. Ross acts as treasurer. The team is cosmopolitan in character, the members' names and native places being: D. Bailey, Hemel Hempsted, Herts; A. E. Braggins (hon. secretary), Banbury; C. M. Hardy, Dundee; R. Hutchison, Inverness; H. G. L. Levy, Jamaica; A. McCowan (captain), Comrie, Perthshire; J. McRostie, a Scotsman, apprenticed at Dunkeld; G. G. Margach, Rothes; A. S. Mendonca, Demerara; R. R. Roach, Demerara; I. A. Roberts, Demerara; and E. W. Thomas, Staffordshire. An interesting proposal which has been made is the formation of a physical-culture class in connection with the club, several of the members being already experts in this form of health-culture.

CANADIAN NEWS.

(From the "C. & D." Correspondent.)

OPIUM AND DRUG ACT.—The Board of Trade have received, through the Colonial Office, a copy of the "Opium and Drug Act," which was assented to on May 19, 1911, for the purpose of prohibiting the improper use of opium and other drugs in Canada. Under this Act it is provided, *inter alia*, that every person who, without lawful or reasonable excuse, imports, manufactures, sells, offers for sale, has in his possession, or takes or carries from any place in Canada to any other place in Canada, any drug for other than scientific or medicinal purposes, shall be guilty of a criminal offence, and shall be liable, upon summary conviction, to a fine not exceeding \$500 and costs, or to imprisonment for a term not exceeding one year, or to both fine and imprisonment. The possession of opium prepared, or being prepared, for smoking is illegal, as is also the exportation of drugs to any country which prohibits the entry of such drug. It is laid down in the Act that the term "drug" means and includes cocaine, morphine, eucaïne, opium, or any salts or compounds of these, and any substance which may be added to the above list under the authority of the above-mentioned Act.

ALBERTA PHARMACEUTICAL ASSOCIATION.—The by-laws of the Association as approved by the Council on March 15 have been issued in pamphlet form, and are thus summarised in the "British Columbia Pharmaceutical Record": The duties of the President and Registrar-Treasurer are outlined in Sections 1-10. The latter is required to furnish bond or bonds for \$1,000, and his remuneration is \$400 per annum. The auditors, too, "shall each receive such sums as the Council may deem proper." Any qualified physician or surgeon in Alberta may be registered as a member on payment of a registration-fee of \$50. The annual fees are fixed as follows: Licentiate in business, \$5; licentiate (not carrying on business), \$2; physicians and surgeons carrying on business as pharmaceutical chemists, \$5; for each additional place of business, \$5. Fees are due in advance on June 1, and if not transmitted before June 30 a draft is made upon delinquents which, if unaccepted, causes the removal of the delinquent from the register, to which he shall be restored upon payment of all fees and a fine of \$5. Notification of retiring from business must be made to the Registrar, or annual fees go on; but a licentiate may, on payment of \$2, enjoy all the privileges of the Association, save carrying on business, if he wishes. The election of the Council (seven members) takes place on the third Wednesday of March, the ballots to be received by the Registrar "not later than noon of the day of the election." The President may call a meeting of the Council at any time, should he deem it advisable, on the request of any four members of the Council, by giving two weeks' notice. At Council-meetings four constitutes a quorum. Members of the Council shall receive \$5 per day or parts of days actually spent in attending meetings, and in addition 5c. per mile each way as travelling expenses. The annual meeting is fixed by the Act to be held on the second Tuesday in July "or any day near thereto." The regular examinations shall be held on the first Wednesday and Thursday of June in each year. Candidates must furnish evidence of at least four years in a drug-store, one year of which shall have been served in Alberta, and pass an examination in chemistry, pharmacy, botany, materia medica, reading and translating prescriptions, and practical dispensing. The fees are \$15, of which none is returned, but half the fee is charged for second time. Three weeks' notice is required of intention to sit for examination. A fee of \$50 and satisfactory evidence of qualification are required from those who desire to be registered without examination. The Board of Examiners shall be appointed by the Council, and consist of two members in addition to the President, who shall be *ex-officio* a member. The Council may supply any vacancy on the Board and remove any member and substitute another in his place. Examiners shall receive \$10 for each examination, and the presiding examiner the sum of \$10.

INDIA AND THE EAST.

(From the "C. & D." Correspondents.)

BUSINESS CHANGE.—The business of Messrs. H. Watson & Co., chemists and druggists, Diamond Harbour Road, Kidderpore, Calcutta, has been closed.

It is officially notified from Simla that nitrate of lime, calcium cyanamide, and mineral superphosphates are exempted from import duty leviable under the Indian Tariff Act.

PERSONAL.—Lieut.-Colonel J. L. Van Geyzel, I.M.S., who has been Chemical Examiner to the Government of Madras since 1887, has retired from the service and proceeded to London to take up his duties at the India Office Stores.

QUININE DISTRIBUTION IN THE F.M. STATES.—The Selangor Medical Administration Report for 1910 alludes to the increase of malaria in Perak, where practically 300,000 quinine capsules of various sizes were given away last year. In Selangor 378 lb. of quinine was issued to hospitals and dispensaries. Capsules containing 5 grains are sold at $\frac{1}{2}$ cent each, but much of the quinine is distributed free of charge.

FOOD AND DRUG REGULATIONS.—An occasional and well informed correspondent writes:

The "Indian Daily News," a Calcutta newspaper, has instituted a campaign against adulteration, and for some time letters have appeared from correspondents giving their experience of the delinquencies of native traders. It seems that nearly every article of food is at some time or other tampered with, and certain revelations are made which are too horrible for repetition. Such articles as milk and ghee, for which there is such a huge sale, are most frequently sophisticated in a notorious degree. That milk is diluted with water is a mild accusation, but when bad water from standing tanks is added, and skimmed milk is thickened with decoctions of starch grains, often mouldy and putrid, the injury to health is disastrous. About 270,000 maunds of ghee are imported into Calcutta every year from Behar, the United Provinces, and Central India. This is re-manufactured or made "pucca," and during the process undergoes adulteration by mixing it with ground nut oil, poppy-seed oil, or mawhah oil. In Calcutta it is again mixed with animal fat, and there are certain shops which sell fat exclusively for the adulteration of ghee. In 1906 the Corporation examined 700 different specimens of ghee, of which 525, or 75 per cent., were impure. Alcoholic liquors sold in the bazaars come in for wholesale condemnation. A large quantity of German and potato spirit is imported into the country and is consumed under another name. Large sellers of cheap whisky have been known not to import a single consignment of whisky for months, which indicates fraudulent manufacture on a large scale. One correspondent suggests the publication of the names of the firms that import fusel oil as a deterrent. The soldiers' beer is another instance of the harmful admixture of a dirty diluent to a good brewed ale. As much as 25 per cent. of water has been known to be added to a barrel of beer sold to the soldiers, and the condition of the water is seldom considered to be the source of enteric. Bitters and foamine are added to give the necessary head and strength. In the matter of fixed oils for culinary and edible purposes there is much to complain of. Mustard oil, the panacea of a Hindu family, is rarely found pure; it is pressed with ground nuts and matured seeds, and sometimes thinned with petroleum. It is said to be the most adulterated of any commodity, as the peculiar flavour of the essential oil present masks other substances added to it. The bloomless white petroleum is being used in large quantities for mixing with seed oils and perfumes, and, although it is cheaper, there is a strong objection against its being mixed with edible oils. Cassava starch is brought over in large quantities from Singapore, and this enters into the composition of flour and arrowroot, much to the disadvantage of their dietetic value. Santonin is said to be mixed with boric acid, honey with raw sugar, tamarind-seeds with coffee, and sulphuric acid in lemonade. What is needed in India is for an inquiry to be made by an official assisted by an analyst, and a representative collection of bazaar products examined and reported upon. If the report shows that adulteration is so bad as it has been stated the municipalities should approach the Local Government, and the Local Government will approach the Imperial Legislative Department, and an Act will be passed to deal with the abuse. It is not by wild and unsupported statements that the end will be gained, but by a careful summary of facts reviewing the true state of the alleged iniquity.

OUR AMERICAN LETTER.

(Special Correspondence to the "C. & D.")

The American Medical Association has been the theatre of a political struggle for a number of years. Two factions have developed—an administration faction and an anti-administration faction. The "antis" apparently got a taste of blood at the recent annual meeting in Los Angeles. They elected their presidential candidate, Dr. Abraham Jacobi, of New York, over Dr. J. N. McCormack. Dr. Alexander R. Craig, of Chicago, was also chosen to succeed Dr. George H. Simmons as general secretary. Dr. Simmons, however, still remains editor of the official journal. The A.M.A. passed a resolution disapproving of medical dispensing, except in cases of emergency, and waved a flag of truce in this respect toward the pharmaceutical profession.

The American Druggists' Syndicate.—A squabble has developed in the inner circles of the American Druggists' Syndicate. Three or four years ago, as the A.D.S. grew, local branches were established in different cities, and subsequently, as these in turn developed, a number of them became independent in character. They became co-operative wholesale houses, and as soon as they did this they began to look out for themselves, and to treat the A.D.S. as they would any other manufacturing concern. Difficulties developed with the Chicago branch, known as the Chicago Wholesale Drug Co., until this concern has finally been cut off from handling A.D.S. supplies. The A.D.S. declares that the Chicago people are traitors to the cause, and the Chicago brethren reply that the A.D.S. products are not satisfactory.

Curative Claims.—The recent decision of the United States Supreme Court in the Johnson "cancer-cure" case puts a stop to the action of the Government in outlawing patent medicines on the ground that exaggerated curative claims are made for them. The Government has always contended that such claims constituted misbranding, but the Supreme Court holds that nothing is said in the law about therapeutic matters, and that the misbranding clause must be limited to questions of identity and purity of ingredients. President Taft fears that this decision will prove little less than disastrous in the enforcement of the Act, and he has sent a special message to Congress requesting an amendment to the law. Two or three Bills have accordingly been introduced into Congress, but it is too early to predict whether or not any of them will succeed at the present special Session. In the meantime, Dr. Wiley and his associates have obtained judgments against two or three hundred manufacturers of proprietary medicines, regarding whose goods exaggerated curative claims were made, but all prosecutions of this sort must now stop until the Act has been amended as President Taft suggests.

Dr. Rusby's Salary.—Great Britain has doubtless heard echoes of the Wiley-Rusby incident, which threatens to prove very embarrassing for President Taft—quite as embarrassing as the unfortunate Ballinger incident. Dr. H. H. Rusby, whom everybody in pharmacy knows on both sides of the Atlantic as Dean of the New York College of Pharmacy, and particularly as a brilliant botanical investigator, has incidentally been serving for two years as one of the private pharmacognocists of the Department of Agriculture at Washington. His particular function has been to examine shipments of crude drugs entering the port of New York, and subsequently to appear as a Court expert when prosecutions are undertaken. It now appears that Dr. H. W. Wiley, under whom Dr. Rusby served in this connection, had made a salary arrangement with Dr. Rusby which violated the strict letter of a recent law of Congress regarding the payment of scientific employees. The arrangement provided that Dr. Rusby was to receive an average of \$20.00 a day for every day actually spent in work for the Government—this amount representing an average of \$9.00 when employed as a pharmacognocist and \$50.00 when employed as a Court expert. It is claimed that the Congressional law prohibits a payment beyond the \$9.00 per diem rate, and that the \$20.00 figure was illegal. An investigating committee in the Department of Agriculture has recommended that Dr. Rusby be dismissed from the service and that Dr. Wiley be permitted to resign. Attorney-General Wickersham, moreover, has approved the recommendations of the committee. The matter is now before President Taft. Dr. Wiley's numerous enemies are eagerly seizing upon this chance to get his scalp, while his still more numerous supporters are bombarding President Taft with telegrams asking for his retention. Dr. Rusby accepted the conditions offered by the Government officials without knowing that they were in the slightest degree illegal.

LEGAL REPORTS.

TRADE LAW.

Damaged Pepper.—In the Lord Mayor's Court, London, on August 1, W. T. Sargent & Sons, produce brokers, 6 Mining Lane, London, E.C., claimed against the Royal Mail Steam Packet Co., Moorgate Street, E.C., to recover 22*l.* 9*s.* 2*d.* compensation for damage to a parcel of 163 bags of white Singapore pepper, carried by the defendants' steamer *Monmouthshire*. As a result of a communication from their buyers plaintiffs reduced the claim to 6*l.* 19*s.* 2*d.*, but as defendants refused to do anything the amended offer was automatically closed. The amount now claimed represented the difference between the selling price and the market price of similar goods at the time the pepper was sold. Other pepper was bought by the plaintiffs to provide against the contract. Counsel for defendants contended that the plaintiffs were bound to minimise the damage, and that plaintiffs were only entitled to recover 6*l.* 19*s.* 2*d.* The jury found for the plaintiffs for 22*l.* 9*s.* 2*d.*, and judgment was entered accordingly, with costs.

High Court Cases.

Unless when otherwise stated these cases have been heard in the High Court of Justice, London.

AN ADMINISTRATION SUIT.

In the Chancery Division, Dublin, last week, before Mr. Justice Barton, the hearing was concluded of the administration suit of *Harty v. Hart*, the proceedings having arisen on further consideration of the Chief Clerk's certificate, which involved questions of law and account. The suit was concerned with the administration of the estate of the late John Hart, chemist and druggist, who died on May 24, 1907. The main question in the case was whether the business carried on by the deceased's sons, John and Thomas Hart, after their father's death, was carried on for the benefit of the estate, or on their own account. The arguments having concluded, Mr. Justice Barton referred the matter back to the Chief Clerk, with directions that further special inquiries on points raised should be made.

GAZETTE.

Partnerships Dissolved.

CUFFE, A., and FEATHERSTONE, H. E., Tadworth and Walton-on-the-Hill, general medical practitioners, under the style of Cuffe & Featherstone.

SPIES, A. and H., and STEPHENS, C. E., Fenchurch Street, London, E.C., commission agents and chemical and colour merchants, under the style of Spies Bros. & Co.; so far as concerns H. Spies (by his death).

WILSON, A. C. and W. R., and FLINT, E. R., Doncaster, general medical practitioners, under the style of Drs. Wilson, Wilson & Flint; so far as concerns E. R. Flint.

The Bankruptcy Acts, 1883 and 1890.

ADJUDICATION.

HUGHES, ROBERT CLEMENT, Hastings, Rye, Lydd, and New Romney, manufacturer of artificial teeth.

BANKRUPTCY REPORTS.

Re T. B. H. Thorne, 16 Harley Street, London, W.—The first meeting of creditors in this case was held on August 9 at the London Bankruptcy Court. Mr. E. S. Grey, Official Receiver, reported that the debtor had stated that four years ago he originated a process for mixing proteid matter with alcohol. Bendle's Meat-Port Syndicate was formed, and that in turn promoted Bendle's Meat-Port Co., Ltd., to acquire the English rights in the invention for 20,000*l.* in shares. Patents for the process had been taken out in Europe, the Colonies, and America. It further appeared that the debtor had 850*l.* shares in the Hygienic Syphon Co., Ltd., which he regarded as likely to become of par value. He owed about 4,000*l.*, and the chief asset was his interest in Bendle's Meat-Port Syndicate, Ltd. The liabilities chiefly related to moneys borrowed for the financing of the patent, and the failure was further attributed to the debtor having lived in excess of his income. In the absence of any offer

the case was left with the Official Receiver to be wound-up in bankruptcy.

Re David Brocklesby, 67 Grimsby Road, New Cleethorpes, Grimsby, Chemist and Druggist.—The examination of this debtor was held at the Grimsby Bankruptcy Court on August 3. He stated that he is a son of the late Dr. Brocklesby, of Grimsby, and is thirty-three years of age. He started business in June 1905 with 30*l.* capital, which he had saved out of his earnings as manager of a drug-store. He attributed his failure to bad health and want of capital. The liabilities amounted to 423*l.* 7*s.* 10*d.* gross, with 416*l.* 12*s.* 10*d.* expected to rank, while the deficiency amounted to 399*l.* 15*s.* 5*d.* Debtor became aware of his insolvency in January 1909, but continued to trade in the hope that his health and business would both improve. With the exception of 40*l.* borrowed money, the remainder of the debts were incurred since he became aware of his insolvency. He had borrowed 60*l.* from friends, and the rest of the liabilities were trade debts. But for illness, through which he had to employ a qualified assistant, he could have recovered his position, as he did manage to pay off 100*l.* worth of liabilities. Debtor appeared to be very ill, and under the circumstances the examination was brief, and will be resumed at the September Court.

LIMITED COMPANIES.

New Companies Registered.

The letters P.C. mean Private Company within the meaning of the Companies Act, 1907, and R.O., Registered Office.

BALE & CHURCH, LTD. (P.C.).—Capital 1,000*l.*, in 1*l.* shares. Objects: To carry on the business of manufacturers of and dealers in chemicals, chemical, gasworks, and electric plant, etc. R.O., 5 Crooked Lane, Cannon Street, London, E.C.

JOHN SIMMS, LTD. (P.C.).—Capital 500*l.*, in 1*l.* shares. Objects: To take over the business of mineral-water manufacturers and ale and stout merchants carried on at 16 Church Street, Lichfield, and at Camoek, Staffs, by A. W. Barnes as "John Simms."

CULLOID CO., LTD. (P.C.).—Capital 10,000*l.*, in 1*l.* shares. Objects: To carry on the business of manufacturers of non-inflammable celluloid, etc. The first directors are H. W. Butler, G. Paxton, A. W. Cutler, and H. W. Cullum. R.O., Craven House, Kingsway, London, W.C.

F. ATKINS & CO., LTD. (P.C.).—Capital 100,000*l.*, in 1*l.* shares. Objects: To take over the business of manufacturers of and dealers in tin boxes, canisters, drums, kegs, and other receptacles, etc., carried on by F. Atkins, J. Crabtree, and G. Atkins, at Dairycoates Works, Hull, as "F. Atkins & Co." R.O., Dairycoates, Hull.

DENTURE INSTITUTE, LTD. (P.C.).—Capital 500*l.*, in 1*l.* shares. Objects: To take over the business of a maker and adapter of artificial teeth and extractor of teeth carried on by A. H. Hirschfeld at Abertillery and elsewhere as the Denture Institute. A. H. Hirschfeld is sole permanent director. R.O., 3 Gelligaer Road, Hengoed, Mon.

IDEAL FOOD CO., LTD. (P.C.).—Capital 750*l.*, in 1*l.* shares. Objects: To take over the patent granted to H. J. R. Hemming for improved methods of and apparatus for sterilising, preserving, and aerating foods, liquids, and organic substances, and treating materials with gases. R.O., St. Stephen's House, Westminster, London, S.W.

W. B. DAWE, LTD. (P.C.).—Capital 500*l.*, in 1*l.* shares. Objects: To carry on the business of chemists, druggists, dentists, opticians, dealers in salts, alkalies, drugs, medicines, photographic and optical materials, etc., and to employ qualified persons to act on the company's behalf as chemists, dentists, and opticians, at Callington, Cornwall, or elsewhere. The first directors are W. B. Dawe, 8 Church Street, Callington, druggist, and Miss P. C. B. Dawe, 7 Church Street, Callington.

FRED STOREY, LTD. (P.C.).—Registered in Dublin. Capital 3,500*l.*, in 1,000 preference shares and 2,500 ordinary shares of 1*l.* each. Objects: To carry on in Belfast or elsewhere the business of manufacturing and pharmaceutical chemists, wholesale and retail druggists, etc. The first subscribers are: T. F. Storey, Kensington Hall, Knock, Belfast, druggist; J. W. Storey, Kensington Hall, Knock, Belfast; T. E. Stephenson, 111 Lisburn Road, Belfast, traveller; and J. A. Walsh, Grosvenor House, Wellington Place, Belfast, chemist. The first directors are T. F. Storey, J. W. Storey, and J. A. Walsh. R.O., 14 Alfred Street, Belfast.

PALATINE DENTAL MANUFACTURING CO., LTD.—Capital 12,000*l.*, in 1*l.* shares. Objects: To carry on the business of manufacturers of and dealers in mineral and artificial teeth and all drugs, materials, and appliances used in dental or other surgery, etc. The subscribers (each of 100 shares) are: F. Butterfield, Clarence Chambers, Piccadilly, Manchester,

practitioner in dentistry; J. S. Tattersall, 34 King Street, Oldham, practitioner in dentistry; F. W. Bradley, Wisbech Castle, Cambs, practitioner in dentistry; W. Arbuckle, 1 Crown Street, Leith, practitioner in dentistry; W. Crowthers, Clarence Chambers, Manchester, journalist; T. Goodhugh, High Street, Sutton, Surrey, practitioner in dentistry; W. E. Gannev, 22 Powis Street, Woolwich, dental manufacturer; A. Pearce, 19 Derby Road, Urmston, dental depot manager. R.O., 23 Queen Street, Albert Square, Manchester.

Company News.

PRICE'S PATENT CANDLE CO., LTD.—The directors recommend a dividend of 15s. per share.

HOMOCEA, LTD.—The report for the year ended March 31 last, to be presented at the meeting in Winchester House, Old Broad Street, London, E.C., on August 17, at noon, states that after paying all advertising, working, and other expenses, and after writing off bad debts, there remains a balance of 1,047l. 16s. 7d. to be carried forward.

Charges or Mortgages.

Under the Companies (Consolidation) Act, 1908, Section 93, the mortgages or charges therein specified are (except in Scotland) void against the liquidator and any creditor of the company unless filed with the Registrar in accordance with the conditions laid down in the Act.

Full statutory particulars of the following have been filed at Somerset House, London, W.C.

Natural Food Co., Ltd.—A memorandum of satisfaction in full on September 5, 1904, of mortgage dated December 19, 1902, securing 800l., has been filed.

Rowley & Varley, Ltd.—Particulars of 200l. debentures created June 9, 1911, the amount of the present issue being 50l. Property charged: The company's undertaking and property, present and future, including uncalled capital. No trustees.

W. B. Cartwright, Ltd.—Mortgage dated July 4, 1911, to secure 1,000l. charged on land in Canada Road, Rawdon, Yorks, with warehouse, shed, and other buildings thereon. Holder: T. Hawkhead, Fernbank, Armley, Leeds.

Receiverships.

Brown & Co. (Manchester), Ltd.—W. E. Coppin, of 64 Darnley Street, Brooks Bar, Manchester, ceased to act as receiver or manager on July 24, 1911.

POISONING FATALITIES.

ELEVEN deaths, of which one was due to misadventure, have been reported since last week's issue.

Ammonia.—At Blackburn Infirmary, Margaret Jane Chew (37), widow of a grocer, died from the effects of liquid ammonia taken by mistake.

Carbolic Acid.—A woman named Naomi Evans, of Pontygoi, swallowed some toothache-mixture containing carbolic acid with fatal consequences. At the inquest the jury returned an open verdict, and said that there was insufficient evidence to show whether the mixture was taken intentionally or accidentally. They also added a rider that they believed the label on the bottle, which bore the word "Poison," should also be more explicit in regard to directions.

Laudanum was used for suicidal purposes by Ernest James Bishop, journeyman butcher, North Woolwich.

Oxalic Acid caused the suicidal deaths of Thomas M. Coverdale, house-painter, West Norwood, and Eliza Rogers (40), Handsworth.

Potassium Cyanide.—At Kensington, during the inquest on Frank Stockton, clerk, who committed suicide by taking this poison, the foreman of the repair department of the Clement Talbot Motor Works said the cyanide was used in the works, but could only be obtained by a foreman's order. He could offer no explanation as to how deceased got the poison, but Stockton had worked in a photo-process works two years ago and might have been in the habit of getting it from chemists. "Suicide while temporarily insane" was the jury's verdict.

Prussic-acid poisoning caused the death of Mrs. A. G. Young, the widow of Dr. C. W. Young, who had died previously on the same day. A Coroner's jury found a verdict of "Death due to prussic-acid poisoning taken while temporarily insane."

Spirit of Salt was used as a suicidal agent by George Edwin (59), hawker, Bromley, and Alfred Henry Carter (40),

coffee-house manager, Loughborough.—At an inquest at Teignmouth on August 7, relative to the death of a tramp, who poisoned himself by taking spirit of salt, Mr. Frederick Charles Edmonds, assistant to Mr. J. H. Maunder, chemist, Teignmouth, said he supplied deceased with twopennyworth of spirit of salt on Friday afternoon. Witness reminded him that it was poisonous, and the man said he wanted it for cleaning brass. Witness cautioned him in the usual way and plainly labelled the bottle with a red label containing the words "Spirits of Salts—Poison." The Coroner (Mr. S. Hacker): "Do you swear that? There is no label on the bottle now." Witness: "I emphatically swear that a poison-label was on the bottle when I handed it to him. It is not a scheduled poison, or I would not have supplied it. I acted in accordance with the requirements of the Act. Spirits of salts is commonly used, especially by plumbers." The jury returned a verdict that deceased committed suicide while of unsound mind.

Strychnine.—At Belfast, James Kennedy (68) died from strychnine-poisoning, having previously bought 30 grains from a chemist, saving he wanted to poison a dog. At the inquest an open verdict was returned.

TRADE-MARKS.

Objections to the registration of any of the undermentioned applications must be stated on Form T.M. No. 7 obtainable at Money Order Offices for £1 and lodged with Mr. Temple Franks, Comptroller-General, Patents Office, 25 Southampton Buildings, Chancery Lane, London, W.C., within one month of the dates mentioned.

The figures in parentheses refer to the classes in which the marks are desired.

(From the "Trade-marks Journal," July 19, 1911.)

"CLENCA"; for horse and cattle medicines (2). By United Counties Cattle Medicine Co., 1A Imperial Chambers, 62 Dale Street, Liverpool. 332,976.

"LI-NOLA"; for disinfectants (2) and for common soaps (47). By Catesbys, Ltd., 64-67 Tottenham Court Road, London, W. 334,005, 334,009.

"COMOLOTAR"; for external medicated preparations (3). By Carbon Oil Works, Ltd., Maltese Cross Building, King Street, Winnipeg. 330,971.

"LEGOL"; for medicinal chemicals (3) and for perfumery (48). By Omega, Ltd., King Henry's Walk, London, N. 333,859.

"OMEX"; for ointment (3). By Mary Burdett, 62 Albert Road, Levenshulme. 334,189.

"GLYMENSTRA"; for medicinal chemicals (3). By Anglo-American Pharmaceutical Co., Ltd., 59 Dingwall Road, Croydon. 334,197.

"MIMOSA" and label design of mimosa leaves and flowers; for photographic papers (39). By Rheinische Emulsions Papier Fabrik, 3 Gasanstaltsstrasse, Dresden, A. 333,970.

"TRUFFRUIT" EXTRACT and label design of star in centre of sunflower; for fruit-extracts (42). By A. Boake Roberts & Co., Ltd., 100 Carpenters Road, Stratford, Essex. 332,996.

"MASSECORRIDE, Automassage liquide"; for perfumery and skin preparations (48). By P. J. Fouquier, 140 Rue de Courcelles, Paris. 333,002.

"CRÈME" for the complexion, and label design of tube of cream and lady's head; for a toilet skin-preparation (48). By Novel Advertising Association, 59-60 Chancery Lane, London, W.C. 329,302.

"MYTHOL"; for perfumery and toilet requisites (48). By Arthur Berliner, 15 and 17 Worship Street, London, E.C. 333,271.

"IBEL" and circle design; for liquid hair tonic and pomade (48). By G. W. Bingham, 8 Southwell Road, Sheffield. 333,687.

"GABILLA, PARIS," and label design; for various goods (48). By H. Gabilla, 25 Boulevard Poissonnière, Paris. 334,077.

"MÉBIA"; for toilet-powder (48). By Myers & Co., 222-226 Cambridge Road, London, N.E. 334,265.

(From the "Trade-marks Journal," July 26, 1911.)

"AHEAD OF ALL" (1) and design of St. George and the Dragon, "BERKORIDE" (2); for chemical substances. By F. W. Berk & Co., Ltd., 1 Fenchurch Avenue, London, E.C. 330,596, 333,186.

"ARGON"; for all goods (2). By J. Appleton, 6 Cotton Street, St. Helens, Lancs. 328,345.

BIRTH.

ASHE.—At 21 Waterloo Road, Dublin, on July 24, the wife of James Ashe, L.R.C.P. and L.R.C.S. I., Ph.C., of a daughter.

MARRIAGES.

ANGLEY—RICHARDSON.—At Christ Church, Winnipeg, Canada, on July 15, by the Rev. Sidney Chambers, B.A., B.D., Frank Bethel Angley, Ph.C., of Radisson, formerly of McAdam's Medical Hall, Kingstown, co. Dublin, to Grace, fifth daughter of the late Andrew Richardson and Mrs. Richardson, Kingstown, co. Dublin.

RIDLEY—ARKLE.—At North Middleton Presbyterian Church, on August 9, by the Rev. John Gray, M.A., James Farrage Ridley, chemist and druggist, son of Mr. J. P. Ridley, Bank House, Rothbury, to Mildred, second daughter of Mr. James Arkle, Scotsgap, Cambs.

DEATHS.

BELL.—On July 24, at 11 Balmoral Road, Fairfield, Liverpool, Mr. Matthew Bell, drug and general broker, aged eighty-three. The late Mr. Bell was apprenticed to Mrs. Daglish, Newcastle-on-Tyne, afterwards Daglish & Ismay, now John Ismay & Sons. With the exception of five years' residence in Hamilton, Ontario, he was in the employ of the latter firm until 1867, when he removed to Liverpool on his appointment as manager for Messrs. Raimes & Co., with whom he remained until they gave up their Liverpool house in 1882. He then commenced business on his own account as a drug and general broker, in which he continued to take an active part up to the autumn of last year, when, owing to the illness of his wife (who predeceased him by eight months),

and also on account of his own failing health, he ceased taking an active share, although taking an interest in it to the last. Mr. Bell was one of the oldest and most highly respected members of the wholesale drug-trade in the provinces. The business will be continued by his son, Mr. Robert Bell, the surviving partner of Matthew Bell & Co., who has been associated with his father in the business for many years.

BEVERIDGE.—At 37 Gilmour Road, Edinburgh, on August 1, Elizabeth M. Donaldson Beveridge, widow of Mr. John Beveridge, chemist and druggist, of Berwick-on-Tweed.

CUNDALL.—On August 7, Mr. Robert Cundall, chemist and druggist, of Pocklington, Yorks, aged sixty-seven. Mr. Cundall died as the result of an accident while cycling back from Bishop Wilton Flower Show. He was found in a ditch bruised and helpless, with his bicycle beside him.

HARRIS.—At 17 Monson Road, Tunbridge Wells, on July 28, Mr. Henry Harris, chemist and druggist, aged sixty-nine. Mr. Harris was secretary and dispenser at the General Hospital, Tunbridge Wells, for thirty-five years. He was an ardent Freemason, acting for over seventeen years as Secretary of the Holmesdale Lodge. At the funeral a wreath was sent by the local pharmacists.

HORTON.—At Crescent Villa, Bucksburn, on August 1, Lizzie Ann, daughter of Mr. James A. Horton, chemist, aged thirty-one.

PARKER.—At 63 Hardwick Street, Hull, on July 28, Mr. George Frederick Parker, chemist and druggist, aged twenty-eight.

STARKIE.—At 126 Strand, London, W.C., on August 4, Mr. Richard Stringer Starkie, pharmaceutical chemist, late Major in the Queen's Westminster Rifle Volunteers, V.D., aged eighty-three. Mr. Starkie's connection with Strand pharmacy was literally lifelong, for he was born at No. 4 of that famous thoroughfare in which he died last Friday. He was the third successive owner of the business, which was established by Mr. Stringer in 1788. He served his apprenticeship at his father's pharmacy at No. 4. In 1848 he passed the Major examination, his certificate being numbered "46," and next year he studied analytical chemistry at University College, under Professor Graham. He later rejoined his father as assistant and developed the analytical side of the business, succeeding Mr. Starkie, senior, on his death in 1863. In 1875 the business was moved to 441 Strand, and five years later to the present premises at 126 Strand, where there was more accommodation. A branch pharmacy was opened at No. 7 Strand in 1883, near the site of the original pharmacy. Mr. Starkie was an enthusiastic Volunteer, joining the St. Martin's Volunteers as a private in 1859. This corps was amalgamated later with the Queen's Westminsters. Before his retirement from the Volunteers in 1886, he attained the rank of captain and hon. major. Mr. Starkie developed into an excellent shot and represented his regiment at various shooting-matches. The Strand pharmacy, which was founded in 1788, is well known to most of London's cosmopolitan visitors. Mr. Starkie, senior, held Royal appointments to George III., George IV., and William IV., but finding that owing to the death of monarchs royal warrants did not last long, he did not think it worth the trouble to obtain one from Queen Victoria, little foreseeing her lengthy reign. Mr. Stringer Starkie worthily upheld the high traditions of his predecessors, both of whose names he bore. The funeral took place on August 9, the service being held at St. Clement Danes Church and the interment afterwards being made at Highgate Cemetery. The retired members of the Queen's Westminster Volunteers were represented by Major W. T. Hamlin, who on their behalf brought a very handsome wreath.

WIDDOWSON.—On July 31, Mr. Reuben Widdowson, chemist and druggist, 5 Arkwright Street, Nottingham. Mr. Widdowson, who was one of the oldest of Nottingham pharmacists, was actively connected for many years with the local Pharmaceutical Association, serving on its Council. He was a Freemason.

PERSONALITIES.

Notes for this section sent to the Editor should be authenticated, and must not be in the nature of advertisements.

MR. C. H. LE BOSQUET, JUNR., Leys School, Cambridge, son of Mr. Le Bosquet, of Paris, has passed the Matriculation examination at London University.

MR. JAMES WRIGHT, representing several British firms in India, returned to Calcutta on August 5. Mr. Wright has spent a pleasant two months' holiday in this country.

MR. T. L. SCOTT, chemist and druggist, Trimdon Colliery, co. Durham, has been elected to fill a casual vacancy on the Sedgfield Board of Guardians and Rural District Council.

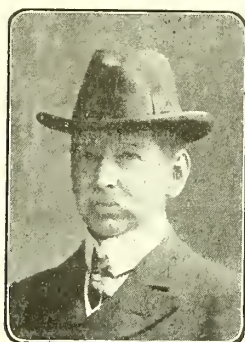
SIR EDWARD EVANS has consented to act as a vice-president of the Incorporated English Beet Sugar Pioneer Association, the object of which is the furtherance of the cultivation of the sugar-beet in England. There are fifteen vice-presidents, mostly members of Parliament.

PRINCE RIPUDAMAN SINGH, heir-apparent to the R. of Nabha, accompanied by the Princess, both of whom are interested in the social conditions of industrial life, paid a visit to the Wellcome Club and Institute, Delford, on August 3, and were entertained to tea by Vice-President, Mr. George E. Pearson, and by Chairman of the Executive Committee, Dr. H. A. Jowett.



MR. M. BELL.

This is a portrait of Mr. James E. Elliman, who, as mentioned last week, showed his enthusiasm for the aviation



MR. J. E. ELLIMAN.

Mr. HUMPHREY NOEL FELIX COOK, Newtown, Great Yarmouth, who won the Fairchild scholarship, was



MR. H. N. F. COOK.

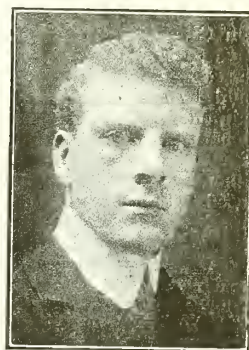
practical and theoretical in 1903 in the Elementary, and a first-class Practical and second-class Theoretical in 1909 in the Advanced Section. At seventeen I decided to sit for the Apothecaries' Hall certificate for assistants, and succeeded in obtaining it the following year, doing the practical pharmacy in the shop, where I had every opportunity afforded me for preparing B.P. galenicals, etc. Early in my apprenticeship I decided to try for the "Fairchild," and was fortunate in working with an ex-student of the Edinburgh School of Pharmacy, whose notes on pharmacy, materia medica, and chemistry were invaluable both for the Fairchild and the Apothecaries' Hall examinations. The information required for the business-knowledge paper I found in *The Chemists' and Druggists' Diary*. The book of autograph prescriptions with translations by G. Stirling was very useful, and I used Ince's Latin Grammar also. I obtained a collection of materia-medica specimens, and studied these with the aid of White and Humphrey's "Pharmacopodia." I consider myself fortunate in being apprenticed in a business where I was given every chance to study and practise in making pills, emulsions, etc., and had a good business-training generally.

THE AUTOBIOGRAPHY OF MR. ROBERT CHIPPERFIELD (*C. & D.*, 1906, I., p. 612), specially written for THE CHEMIST AND DRUGGIST, is reproduced in the "Southampton Times" of August 5. Interesting particulars of Mr. Chipperfield's will are also given in our contemporary. The will is dated March 8, 1905, and the Mayor and Corporation of Southampton, in conjunction with his son (described as the best son and best man he has ever known) are appointed executors. He leaves in trust to them the whole of his real and personal estate, with the exception of the contents of Redcliffe House, which he leaves to his son (with the exception of the oil and water-colour paintings and engravings, which are bequeathed to his executors on the death of his son). He directs his executors to pay to his son an annuity of 1,200*l.*, and to his daughter an annuity of 300*l.*, to be increased to 1,000*l.*, on his son's decease, should she survive him. On the death of his son, his executors are to pay, within three months, 5,000*l.* to the Trustees, Managers, or Governors of the Shirley Homes (known as the Barlow and Elyett Homes).

feat of the Frenchman Védérines by sending him a consolation cheque for 1,000*l.* Jules Védérines has since sent the following telegram to Mr. Elliman: "I have only just been able to find your address to thank you from the bottom of my heart for your *beau geste*. I can assure you I shall never forget your gift or your kind interest in me." Mr. Elliman is the proprietor of Elliman's Embrocation, one of the most successful proprietary articles in this country. He has frequently exhibited his generosity to the town of Slough, where his factory is situated.

The executors are desired to erect or rent a chess-room, and furnish it with twelve sets of chess men and boards. Sums of two hundred guineas and one hundred guineas are bequeathed to his past assistants, Mr. Bishop and Mr. Fredk. Sellitoe, in order to record "the fact, that to their sterling integrity, unremitting industry, and faithful discharge of their duties, I attribute much of my financial success." He also authorises his executors, should they be so pleased, to expend 100*l.* annually in giving a yearly treat or outing to deserving children resident in Southampton.

This year's Pereira Medallist is Mr. Bruce MacDonald Brander, of Edinburgh, who after his education at Banff Academy was apprenticed for five years to ex-Provost Alexander, of Banff, where he received an excellent pharmaceutical training. Subsequently he had experience in Perth, Inch, and Edinburgh. While in the metropolis of the North he attended the junior course of evening classes at the Edinburgh Central School of Pharmacy. He then took the summer course at day classes, and passed the Minor examination in October 1907. During this course he took first place in the class examinations in all the subjects, and was awarded the first prize presented to the school by Messrs. Burroughs Wellcome & Co. He then became assistant to Mr. W. B. Cowie, principal of the school, and continued to study for the Major examination, which he passed in July last. He is still with Mr. Cowie, to whose encouragement and assistance he attributes his present success.



MR. B. M. BRANDER.

BUSINESS CHANGES.

Notes for this section sent to the Editor should be authenticated, and must not be in the nature of advertisements.

MESSRS. THOMPSON & CAPPER, homœopathic chemists, are about to remove their Huddersfield business from 42 John William Street to new premises in the town.

MR. C. W. BRUMWELL, Ph.C., has purchased the business of Mr. A. W. Summerfield, pharmacist, 198 Rye Lane, Peckham, London, S.E., and will carry it on under the same name.

MESSRS. BEALE & SON, chemists, notify that their chief establishment is now 3 High Street, South Norwood, London, S.E. (instead of 12 Portland Road), where all communications should be addressed.

MR. H. W. DIX, chemist and mineral-water manufacturer, 20 The Brittox, Devizes, has sold his business to Boots, Ltd., through the agency of Messrs. Brett & Co., Leicester, who also valued for both parties.

MR. ROBERT BELL, in announcing the death of his father, Mr. Matthew Bell, intimates that, as surviving partner, he will continue the business of Messrs. Matthew Bell & Co., drug and general brokers, 6 Rumford Place, Liverpool, as hitherto.

"DISEASES AND REMEDIES."—The fourth edition of this useful book for chemists has recently been published by the *C. & D.* It is a concise survey of the most modern methods of medicine, telling the nature of ailments and describing the methods of treatment. The fourth edition has been carefully revised by a general medical practitioner, and certain parts of the book have been entirely rewritten. It is published at 3*s.* (by post 3*s.* 3*d.*), and can be obtained from the *C. & D.* offices in London or Australia and from the wholesale and sundries houses.

National Insurance Bill.

SUSPENSION OF THE BILL.

With the close of the brief sitting of the House of Commons on August 4 the National Insurance Bill was suspended in regard to the further consideration of that measure until the autumn Session. During the afternoon the Chancellor of the Exchequer took the opportunity of reviewing the general situation in regard to the Bill, and paid a generous tribute to the fair-minded reception which it had been accorded from all parts of the House, a sentiment which was warmly acknowledged on the part of the Opposition by Mr. H. W. Forster, M.P.

CLAUSES 16 AND 17.

On Clause 16 Mr. Lees Smith, M.P., who has taken an active part in the discussions upon the Bill, moved a new sub-section empowering the mother to decide whether she would be attended by a duly certified midwife or a duly qualified medical practitioner, and also providing that any payment in cash should be made to her.

The Chancellor of the Exchequer said he was prepared in principle to accept that part of the amendment which related to the choice of doctor or midwife. As to the second part, the Government felt that the matter was one that should be left to the Friendly Society. If the amendment were withdrawn he would undertake at a later period to give effect to the views of his hon. friend.

Clause 16 was then added to the Bill; and on Clause 17, which empowers the approved societies to subscribe to hospitals and other charitable institutions, the Chancellor moved to extend the same power to the local Health Committees.

This amendment was agreed to, and the clause was added to the Bill, with an additional proviso, moved by the First Lord of the Admiralty, that nurses may be appointed for the purpose of visiting "and nursing" insured persons, and omitting the words "who are members of the society."

The Chancellor of the Exchequer, in moving to report

Clause 18 will not be proceeded with until the Session is resumed in October.

NOTES.

Clauses 12 to 15 of the National Insurance Bill as amended in Committee have been published separately, and are obtainable from Messrs. Wyman & Sons, Ltd., for 1½d. post free.

Sir Henry Norman, M.P. for Blackburn, has received an official letter from the Pharmaceutical Society of Great Britain tendering him "Sincere thanks for the assistance you have rendered in the House of Commons" in helping to safeguard the rights of chemists under the National Insurance Bill. Similar letters have been received by other M.P.s, and this courtesy of the Pharmaceutical Society has been a matter of comment in the Lobby.

"A Retailer" (125/41), who was in the House on August 2 during the discussion on Clause 14, writes: "Looking backwards, one shudders to think what might have happened had we not a chemist-member in the House. The real fight is still ahead. The citadel remains to be stormed. Many things may happen. Nevertheless the outlook is brighter and more hopeful. Most of us must be prepared to entirely remould and reorganise our businesses, but whether it be for better or worse will depend in a great measure on ourselves. If pharmacists are too blind to profit by the experience and costly lessons of the past, if too apathetic and indifferent to take advantage of the present opportunity to better their condition, then the fault, the blame, and the shame will rest entirely on our own shoulders."

WESTMINSTER WISDOM.

The Week in Parliament.

THE PARLIAMENTARY SESSION.

The Prime Minister will on Monday next announce the date upon which Parliament will reassemble for the autumn Session.

THE FINANCE BILL.

The second reading of the long-postponed Finance Bill was taken in the House of Commons on August 9. The principal opposition criticism came from Mr. Austen Chamberlain, M.P., who expressed the hope that the Chancellor of the Exchequer would see that the licence-duties were placed on a fair and reasonable basis. Mr. Glyn-Jones's new clause giving power to grant licences to wholesale druggists to sell spirit and to chemists to deal in medicinal wines was given in the Order paper on Thursday.

STORAGE OF SPIRIT.

Sir George Younger on August 7 asked the Chancellor of the Exchequer whether his attention had been called to a notification received by the Board of Trade from the High Commissioner of the Australian Commonwealth that on and after January 1, 1912, an

official Excise certificate as to storage in wood for a period of not less than two years would be required in connection with importations of spirits other than gin, geneva, hollands, schnapps, or liqueurs, into the Commonwealth, failing production of which two years' storage in Australia would be required before sale; and whether he would see that arrangements were made by the Board of Customs and Excise to issue such certificates to British exporters.—The Chancellor of the Exchequer replied that the matter is under consideration.

SWINE FEVER.

Mr. Charles Bathurst asked the Parliamentary Secretary to the Board of Agriculture on August 7 whether he has made himself acquainted with the opinions upon the nature and prevention of swine fever expressed by Professor Paul Uhlenhuth, Director of the Bacteriological Department of the Kaiserliches Gesundheitsamt in Berlin, at the Royal Institute of Public Health on July 19; whether the veterinary experts of the Board share the



OUR ARTIST'S IMPRESSION OF A TYPICAL PHARMACY WHEN THE NATIONAL INSURANCE BILL COMES INTO FORCE.

progress, then passed in review the general principles of the Bill which had been decided upon, and thanked the representatives of all sections of the House for the assistance which he had received in the conduct of the measure so far through Parliament. Among the subjects dealt with by the right hon. gentleman was the question of sanatoria benefit, and in regard to this he said that they had extended treatment of this character within the limits of their resources to women and children of insured persons. He thought that this was a valuable extension. (Cheers.) It would involve an additional charge upon the State, and he would be glad to do his best to meet it. They had also extended the treatment of tubercular cases not merely to sanatoria, but to other methods of treating the disease. They had practically committed themselves to a national campaign against consumption, and that was a very important alteration in the Bill before the House.

After a brief discussion, in which representatives of the Opposition and of the Labour party gave their views on the present position of the Bill, progress was reported, and

views expressed by the German professor as to the nature of the disease, the means of its transmission, and the methods of destroying its germs and so preventing its spread; and whether the employment of an immunisation serum, as advocated by the lecturer, is considered practicable by the Board's veterinary advisers.—Sir E. Strachey replied that the views expressed by Professor Uhlenhuth as to the pathology of swine fever were in agreement with those held by the Board's veterinary advisers. The Board did not think that swine fever could be stamped out by the use of an immunising serum.

STERILISATION OF SKINS AND HIDES.

Mr. Charles Bathurst asked on August 7 whether, in view of the increase of anthrax and the universally accepted theory that the main source of infection is the association of animal foodstuffs with hides, skins, wool, horsehair, mohair, rags, and other materials prior to importation, the Board of Agriculture has considered the desirability of insisting upon such articles being sterilised at the port of shipment; whether the Board's scientific advisers have considered the efficacy of the process advocated by Mr. Alfred Seymour-Jones, of Wrexham, of treating such materials with formic acid and mercuric chloride, and the recent report on the subject submitted by Dr. Constant W. Ponder to the Leathersellers' Company of London; and, if so, with what result.—Sir E. Strachey replied that the answer to the first and second parts of the question was in the affirmative. The Board do not consider that the investigations made with regard to the process in question are sufficiently complete to justify the Board in advocating its adoption, but the matter would be kept in view.

NAVAL DISPENSERS.

Mr. Hohler asked the First Lord of the Admiralty on August 7 whether his attention has been called to the fact that an Admiralty Order, numbered T 4957/05, purported to deprive dispensers of the right to first-class passages when travelling by sea; whether he is aware that the Order is in direct contravention of her late Majesty's Order in Council dated October 15, 1872, which included dispensers in the list of salaried officers, and conferred upon them all the advantages appertaining thereto, *inter alia*, the right to first-class passages on first appointment to an establishment abroad and on final relief from such appointment; whether he will see that right secured to them by the Order in Council is restored, or state what is the reason for depriving dispensers of the above privilege; and what power the Admiralty possesses enabling them to overrule an Order in Council.—Mr. McKenna replied that an Admiralty Order was issued in 1905 directing second-class accommodation to be used for a number of classes of salaried officers, including dispensers. This matter is at the discretion of the Admiralty, and first-class travel is not one of the advantages bestowed by the Order in Council referred to. The decision was taken by the Government in 1905 on the ground, I am informed, that the expense of first-class travel was not justifiable in the case of minor civil officers with small salaries.

POISONS AND PHARMACY (IRELAND) BILL.

This bill, which was printed in the Summer Number, has now been published by his Majesty's Stationery Office, and is sold by Messrs. Wyman & Sons, Ltd., Fetter Lane, London, E.C., at 1½d. post free. We reprint Clause 1 as it now appears:

1.—(1) A body corporate may carry on the business of a pharmaceutical chemist in Ireland—

(a) if the business of the body corporate, so far as it relates to the keeping, retailing, or dispensing of poisons or to the retailing, dispensing, or compounding of medical prescriptions is under the control and management of a superintendent who is a duly registered pharmaceutical chemist or licentiate apothecary whose name has been forwarded to the Registrar of the Pharmaceutical Society of Ireland to be entered by him in a register to be kept for that purpose, and who does not act at the same time in a similar capacity for any other person or body corporate; and

(b) if in every premises where such business as aforesaid is carried on and is not personally conducted by the superintendent such business is *bona fide* conducted under the direction of the superintendent by a manager or assistant

who is a duly registered pharmaceutical chemist or licentiate apothecary, and whose certificate of qualification is conspicuously exhibited in the shop or other place in which he so conducts the business.

(2) A body corporate may use in Ireland the description of "pharmaceutical chemist" or "dispensing chemist" if the requirements in paragraph (a) of this sub-section as to the carrying on of the business are observed, and if the superintendent is a member of the board of directors or other governing body of the body corporate as the case may be.

(3) A body corporate may carry on the business of a chemist and druggist or druggist in Ireland—

(a) if the business of the body corporate, so far as relates to the keeping, retailing, or dispensing of poisons, is under the control and management of a superintendent who is a duly registered pharmaceutical chemist or duly registered chemist and druggist or duly registered druggist whose name has been forwarded to the Registrar of the Pharmaceutical Society of Ireland to be entered by him in a register to be kept for that purpose, and who does not at the same time act in a similar capacity for any other person or body corporate; and

(b) if in every premises where such business as aforesaid is carried on and is not personally conducted by the superintendent such business is *bona fide* conducted under the direction of the superintendent by a manager or assistant who is a duly registered pharmaceutical chemist or licentiate apothecary or duly registered chemist and druggist or duly registered druggist, and whose certificate of qualification is conspicuously exhibited in the shop or other place in which he so conducts the business.

SUMMER OUTINGS.

Bowls and Cricket.

THE members of the Bolton Pharmacists' Association journeyed by char-à-banc to the village of Warburton for the summer outing on August 2. The afternoon was spent in playing bowls, and after tea the party joined in a game of cricket, a very pleasant day being spent. Messrs. Holt, Massy, and Rushion made the arrangements. Photographs of the party were taken by Mr. Percy Knott, the President.

Wolverhampton Merry.

THE annual excursion of the Wolverhampton Chemists' Association took place on August 3. The party joined the motorboat at Tettenhall and proceeded to Brewood. The journey was thoroughly enjoyed, the heat of the sun being tempered with a delightful breeze. The party was met at Brewood by Mr. Ellisson, who conducted the members to the Lion Hotel, where they met Mrs. Ellisson and others of the party who had motored over. Among those present at the tea were the President and Mrs. Dunn and their little daughter, the Secretary (Mr. J. H. Coleman), Councillor and Mrs. Willcock, Mrs. Gibson, Mr. and Mrs. Bowdler, Mr. and Mrs. Ellisson, Mr. Fellows, Mr. Forster, Mr. Hall, Mr. and Mrs. Phillips, Mr. and Mrs. Stanway, Mr. C. Warner, and Miss Bassett, Mr. and Mrs. Hill (Birmingham), Mr. and Mrs. Crook (Smethwick), Mr. Hughes, and the Secretary of the Midland Pharmaceutical Association and Mrs. Buckingham. After tea the old church was inspected and the district viewed from the top of the church tower. The start home was made at 8 o'clock.

A Brighton Annual.

THE annual beanfeast of the employés of Messrs. G. B. Kent & Sons, Ltd., was held, as has been usual for many years past, at Brighton on August 5, dinner being served in the Banqueting Hall, Royal Pavilion, with Mr. Ernest Kent in the chair. After the loyal toast had been honoured, Mr. Carlos Booth (Cuban representative), in giving that of "The Company," commented upon the good name which the firm's brushes bore. Mr. A. H. Lidderdale, in responding, mentioned that all departments were full up with orders. The Chairman, in proposing the health of the employés, said that a wealth of good feeling existed between the directors and their employés. Mr. Wright (for Farringdon Road), Mr. Humphreys (Victoria Park Works), and Mr. Craft (Hemel Hempstead Works) briefly responded. In the absence of Mr. Chas. White, Mr. Wm. Moore (Indian representative) replied for the visitors, and Mr. G. B. Wright spoke on behalf of the travellers. After a vote of thanks had been accorded to the stewards, the company made their way to the lawn, where they were photographed. Mr. Ernest Kent afterwards invited about thirty of the party to a trip by motor-char-à-banc to the Drée. Altogether a very pleasant day was spent.

TRADE NOTES.

PUMILAVE.—The Merkhams Trading Co., Ltd., 810 Bath Street, City Road, London, E.C., have taken over the sole selling rights of "Pumilave."

NEW LIST.—Messrs. Oldfield, Pattinson & Co., New Bridge Street, Manchester, have brought out a new edition of their price-list of chemists' specialities, proprietary articles, druggists' sundries, and photographic goods. It is a compact list and is arranged in a convenient form for reference in the shop.

HORLICK'S LUNCH-TABLETS, which are Horlick's Malted Milk in a compressed form, have been referred to in the *C. & D.* on several occasions. A variety has now been introduced which contains chocolate in addition. The flavour of the chocolate tablets is sure to be an additional recommendation of these very pleasant lunch-tablets.

DENTAL REQUISITES.—Messrs. Burtoughs Wellcome & Co., Snow Hill Buildings, London, E.C., exhibited dental specialities at the University of London in connection with the annual meeting of the British Dental Association. These included sterilised loric cotton-wool in 2-oz. packages provided with an ingenious device by which small quantities can be withdrawn from the package without exposing the remainder to contamination; a dental syringe for injecting local anæsthetic solutions into the gums, and epinine and cocaine solution.

CORONET WASHING-SQUARES.—Messrs. Solport Bros., 188 and 190 Goswell Road, London, E.C., have just introduced a novelty in washing-squares, which they call the "Coronet." These are made from a specially knitted cotton net material, with neatly bound edges, and are provided with a loop in corner by which they may be hung up. On account of their open character they quickly dry, and are thus more hygienic than the heavier and thicker materials often



sold for the same purpose. The squares are made in three sizes, 8-in., 10-in., and 12-in. square, and are put up in boxes of a dozen, and retail at 3d., 4½d., and 6d. each.

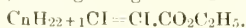
THE "HALIFLOR" Co.—Through an oversight a curious error occurred in the advertisement of the "Haliflor" Co., which was printed in the Summer Number. It should have been stated of the Crown Princess Violet that it is "now so largely advertised" instead of as printed. The error was of such a character that we have no doubt our readers put the correct construction on the sentence.

SCIENTIFIC PROGRESS.

Temperatures under this heading are on the Centigrade scale.

Nellosan is a new nutritive preparation of the nerve-food type, and contains natural albumen, lecithin, and organically combined iron. It has the following composition: Fat, 7.3 per cent.; albumen, 51.1 per cent.; carbohydrates and mineral matter, 8.15 per cent. The mineral matter contains 21.6 per cent. of iron oxide.

Lipiodin is the ethyl ester of the di-iodised unsaturated higher fatty acids, having the general formula

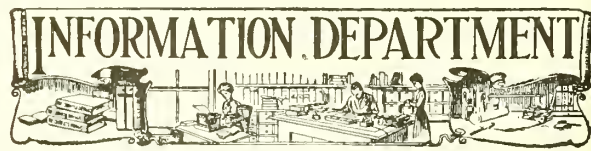


The preparation crystallises in long white needles, and contains about 41 per cent. of iodine. It is recommended where an easily absorbable form of iodine is indicated, and is soluble in most organic solvents.

Laurolic Acid.—According to Brecht (*Jour. Prakt. Chem.*, 1911, 395), when camphanic acid is distilled with lime, laurolic acid, $C_{11}H_{19}O_2 \cdot 2H_2O$, is produced. This acid is probably identical with the allocampholytic acid described by Walker and Henderson, but not with the isolaurolonic acid of Nozes, which is probably a mixture of at least two isomeric acids.

A New Aromatic Alcohol.—Semmler and Zaar (*"Berichte,"* 1911, 460) have isolated a new alcohol from the essential oil of *Andropogon Schœnanthus* (? *Cymbopogon Martini*). It is not isomeric with geraniol, although apparently closely associated with it, and has the formula $C_{15}H_{25}O$. It boils at 226°-227°, and yields, on oxidation with chromic acid, an aldehyde, $C_{15}H_{23}O$, and on further oxidation an acid, $C_{15}H_{21}O_2$, melting at 130°-131°. This new alcohol is identical with the recently investigated perillie alcohol. By treatment of its solution in petroleum ether with phosphorus pentachloride the chloride $C_{15}H_{23}Cl$ is formed, which, by reduction with sodium in absolute alcohol, yields the terpene limonene.

Pæonol.—The root of *Pæonia arborea* yields a crystalline, distinctly aromatic compound, pæonol, melting at 48°-50°. If the root be crushed with water the odour gradually develops. It is therefore probable that pæonol is in reality the decomposition product of a glucoside present in the root. Péron has (*"Répertoire de Pharmacie,"* 1911, 308) investigated the subject, and has come to the conclusions that (1) pæonol does not exist ready formed in the root, but results from the decomposition of a glucoside; (2) a special ferment is present in the root capable of bringing about the decomposition in favourable circumstances; and (3) hydrolysis can also be effected by dilute acids, but not by invertine or emulsine.



Postal Address:
C. & D. INFORMATION DEPARTMENT, 42 Cannon Street, London, E.C.
Telegraphic Address: "CHEMICUS LONDON."
Telephone No.: BANK 852 (two lines).

INFORMATION WANTED.

We would be obliged if any reader would inform us by post-card or telephone who are the makers or agents of the articles mentioned in the following inquiries received since our last issue:

- 123/23. "Thymocain."
- 123/280. "Zincopyrin."
- 125/46. "Nit-Kill": makers.
- 126/74. "Leazone Co.": address.
- 123/59. Raspail's apiol and steel pills.
- 127/23. Bruce Braithwaite's movable cyeshades.

INFORMATION SUPPLIED.

During the past week we have answered inquiries as to where the following articles can be obtained, and in many cases we have given the actual makers. The information will be repeated to any other inquirers who send to this Department a stamped and addressed envelope for the purpose.

- | | |
|---|--|
| Acid phosphates (123/74). | Maritime pine oil (122/64). |
| Bottle-washing machinery (126/16). | "Norisco" tooth-brushes (125/15). |
| Bourjois Poudre de Riz (123/3). | Opal pots (American and German) (122/9). |
| Dubois & Co.'s specialities (123/52). | Personal weighing-machines (124/7). |
| Eau de Javelle (124/52). | "Rembrandt" flask (121/67). |
| Exporters of pharmaceutical specialities (Siam) (122/24). | Smith & Co.'s tooth-powders, etc. (123/52). |
| Felt, etc., for chest-protectors (Buenos Aires inquiry) (124/41). | Sulphur wasp-destroyers (123/2). |
| Keratin capsules (125/70). | Des Vages's corn-cure (125/19). |
| Massage instruction (126/26). | Vanillin (116/12). |
| "Mikado" toilet-paper (South African inquiry) (121/19). | Vapal-Naphthol (121/66). |
| Mixers (for tooth-paste) (125/25). | Walker's disinfecting blockettes (123/36). |
| | Wholesale importers of Continental crude drugs (120/58). |

APPRECIATION.

From a Yorkshire Wholesaler:

"I must again thank you for your information; it has resulted in business with the London agents for a Paris house. There is no doubt that you are the Buyer's Guide. I shall not omit to mention THE CHEMIST AND DRUGGIST at every opportunity."—(123/20.)

OBSERVATIONS & REFLECTIONS.

By Xrayser II.

The Most Important Change,

and the one of the greatest value that has been made in the National Insurance Bill is without doubt the placing of the medical benefits in the hands of the local Health Committees, and thus ruling out altogether the Friendly Societies. This is excellent; not even the societies themselves ought to find fault. Since no society could possibly be allowed to save money by farming the medical benefits, so to speak, they will be glad to get rid of the management of this part of the work of the Bill. Next in importance is the promise that the committees will be able to fall back on the rates if the contributions under the Bill are not sufficient for medical benefits. This is a solution of the problem that few people anticipated, and it entirely clears up the difficulty that I have sometimes given expression to—of filling a quart pot with a pint of liquid. Now that the money will be forthcoming our next duty is to see that the Health Committees are properly guided in the matter of fixing the scales; and if this is seen to, the last vestige of hardship for both doctor and pharmacist will have disappeared.

The Passing of Clause 14,

as amended by Mr. Glyn-Jones, gives pharmacists a legal status as dispensers of medical prescriptions which they have not hitherto enjoyed in this country. With the exception of a comparatively small number who are already regarded as qualified by practice, only such persons as are qualified under the Pharmacy Acts are or will be officially recognised in this capacity. This does not place us on an equal footing with most foreign pharmacists, but it is a step in that direction. The discussion in the House of Commons of Clauses 13 and 14 will of itself do much to raise our calling in public estimation. Never before, probably, have the claim and the right of chemists to public confidence and recognition been so fully and convincingly set forth; there was scarcely a dissentient voice, and the alacrity with which the amendments were accepted by the Government spoke volumes in our favour. This cannot fail to have a wide-reaching effect on the public mind, nor can it be doubted that when the Bill becomes law the operation of these clauses will have a still greater, an ever-growing effect. The general public can scarcely fail to ask why chemists should be thus chosen to dispense under an Act intended to benefit so large a proportion of the population unless they have been found to be the fittest persons for the work, or to draw the inference that what is best for one class is best for another. If the State prefers the chemist to the doctor in this capacity, the individual will argue that he too might do well to insist on having the services of an expert in dispensing. Why should the man who does not need the help of the State against sickness or disablement not be as well served as the man who does? It is no doubt possible to exaggerate the benefits which will ultimately accrue to us under this Bill; but, as I have always urged, we may reasonably welcome it in our own interest as well as from an altruistic point of view, and our warmest thanks are due to Mr. Glyn-Jones for the skill and spirit with which he has laboured on our behalf.

It never Rains but it Pours,

and so we are threatened with a fresh deluge of legislation in another Pharmacy Bill. This time it is a Bill "to provide for the qualifications of

dispensers all round"; in other words, to enable pharmacists, as well as apothecaries and the War Office, to obtain plenty of cheap assistants. The *C. & D.* has for years laboured hard to convince the Pharmaceutical Council that the Minor examination was much more stringent than is necessary for the work chemists have to do, but hitherto this has been preached to deaf ears. The natural result is that now that there is to be a little extra demand for qualified assistants they are not to be had for love or money. It is astonishing how quickly the Council can make up its mind when the proper motive-power is applied. I wonder what the motive was this time? Was it self-interest that moved the Council to such a hasty decision?

The Omission

of any mention of *THE CHEMIST AND DRUGGIST* in the "Pharmaceutical Journal's" report of Mr. Wells's Conference address was quite the proper thing. There are two facts which the Irish Pharmaceutical Society never seems to realise. The first is that it had no right to exist at all—it should have waited for Home Rule till the appointed time, which time is not yet; and secondly, since it had the effrontery to come into being, it ought at least to have the common sense to play second fiddle to the Square. The fact that Irish pharmacists have taken their own line is simply one more proof that they are afflicted with a double dose of original sin, and therefore no one need be in the least surprised that the official organ should have seen it to be its duty to edit Mr. Wells's address, and thus put Mr. Wells in his proper place.

In this Hot Weather

it is refreshing even to read of drinks, and I have been seeking refreshment in the study of Sir Kenelm Digby's hundred and odd receipts for meads and metheglins—the names are interchangeable, though some writers represent metheglin as a stronger drink than mead. The name "hydromel," given to both, indicates their character, their chief constituents being honey and water, fermented naturally or by means of yeast. Herbs of all kinds were used as flavourings or as physic, and white of egg was added to clear the whole. Sir Kenelm has a note on honey for the direction of his readers. It is, he says, of three kinds. Virgin honey is that of the first collection after the spring swarm; Life honey that collected the next year after the swarm; Stock honey that which is left over from old collections. He considers the honey sent from Hampshire and Norfolk the best. The proportion of honey to water varied greatly; the king's mead contained one part to six, and this was apparently a fair average for the stronger sorts. The herbs varied both in quantity and kind according to taste or intention; in ordinary mead, we are told, "there should be so much as to drown the luscious sweetness of the honey, but not so much as to taste of herbs and spice when you drink the Meathe." The stronger the drink the more of these ingredients was required, because they were "mellowed away" in course of time. Sir Kenelm recommends as his favourite herbs eglantine-leaves, liverwort, scabious, balm, rosemary, bay-leaves, thyme, sweet marjoram, and eryngo-roots. This is for what may be called a "steady drink"; particular herbs were added for particular purposes; Lady Gower's mead for the liver and lungs contained over a score. A very common flavouring was clove-gillyflowers (sops-in-wine). When it is added that in addition to all these receipts for meads Sir Kenelm's "Closet Opened" contains thirty or forty others for ales, wines, possets, ciders, and such-like preparations, it will be seen that our forefathers had a liberal taste in drinks.

"SANITAS POWDER" v. SLUGS.

"SANITAS POWDER" rid's Garden Beds of Slugs, and is now being well advertised for that purpose.

Mr. W. P. Wright in "The Garden, Week by Week" says, "The hint I was going to offer about slugs was to scatter 'Sanitas Powder' on the soil amongst the plants. Slugs simply loathe it."

Special Show Cards and Handbills will be sent on application.

The "SANITAS COMPANY" Ltd.
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Editorial Articles.

A Dispenser's Qualification.

ONE of the most critical parts of the debate in the House of Commons on Clause 14 of the National Insurance Bill was that in which various attempts were made to add as dispensers under the Bill persons possessing qualifications inferior to those of chemists and druggists. Dispensers who have been employed by medical men for three years previous to the passing of the Act may be employed by a qualified chemist, and these doubtless include apothecaries' assistants and perhaps some who have been compounders in the Army. But the attempt to include all apothecaries' assistants and Army compounders was strenuously resisted, for the very good reason that these qualifications under present conditions do not imply that the dispenser possesses sufficient experience. This turn in the debate was anticipated, and fortunately had been provided for. It was then that Mr. Glyn-Jones made the announcement that if the Bill passes in its present form the Pharmaceutical Society will take immediate steps to promote a Bill to provide for the qualification of dispensers. This it is understood will be undertaken after consultation and agreement with the Society of Apothecaries and the War Department, which probably means that some evidence of a

preliminary training and of real experience in dispensing will be required before apothecaries' assistants or Army compounders can take their place at the dispensing-counter of a chemist's shop. This will be good for future dispensers, but nevertheless the matter of the new qualification is a serious one that needs approaching in a statesman-like manner. It is an opportunity for consolidating existing interests and placing the dispensing of medicine on a definite basis. It must be borne in mind that dispensing forms the most important portion of the pharmacist's duties. It is a function requiring the greatest care and attention, as any slip may be fraught with dangerous consequences to the health of the patient, or may defeat the prescriber's skill. This is fully recognised in all countries, as is evident by the increased scientific demands that are being made of pharmaceutical candidates. It will be noted that the qualification aimed at differs somewhat from that of the pharmaceutical assistants in Ireland who only undertake their duties temporarily. No doubt this and the plan put forward some years ago in a nebulous form by Mr. Cuff can be re-examined and adapted to present-day requirements. In Continental countries no apprentice is permitted to make up a prescription except under the supervision of a qualified pharmacist, who personally bears full responsibility for the product, and so far all attempts made to legalise a class of second-grade *personnel* in pharmacies have failed. The fact must not be overlooked that conditions are different on the Continent, where the compounding of prescriptions is a privilege solely pertaining to the pharmacist. With us, excepting Ireland, where the Continental definition applies, the whole question hangs on the compounding and retailing of poisons, and the registrable qualification only applies to this aspect of professional duties. As the law now stands, only a qualified pharmacist is legally entitled to sell a scheduled poison. It would be obviously ridiculous to introduce a "qualification" for compounding prescriptions not containing poisons, as no restrictions are at present imposed—it is the sale or compounding of poisons that are regulated, not the art of dispensing as such. Therefore a dispensing qualification might tend to weaken the full qualification. The way this question has been solved in some Continental countries where prescribing forms at least two-thirds of the pharmacist's duties is as follows: After the term of apprenticeship has ended, a Preliminary examination has to be passed and the successful candidate is required to work as an assistant for a period of two years, or more, before being permitted to continue his studies for the full qualification. He has all the rights of a pharmacist so far as professional duties are concerned, only he is debarred from assuming any position of responsibility, such as acting as manager. Applied to British conditions, the following suggestion might be considered: At the expiration of a regular apprenticeship, extending to three or even reduced to two years, in view of the increased preliminary educational requirements now made, a "dispenser's" examination would have to be passed, regardless of age. The holder of this certificate would be entitled to act as an assistant to a qualified pharmacist under his employer's responsibility, and at the end of, say, three years, would be able to sit for his qualifying examination. This would also solve the difficulty of dividing the Minor, and practical pharmacists would be able to discuss the most desirable form of curriculum for the coming generation, including, if vanity dictates and the status of the profession requires it, a hierarchy of titles presided over by the D.Ph.

The Pharmaceutical Preliminary.

It is generally considered that the good that has been done to retail pharmacy in Great Britain by the stiffening of the Preliminary examination requirements and the Pharmaceutical Societies ceasing to conduct an examination has not nearly balanced the real detriment that has been done. We know that it is a most difficult thing to go back upon such a change as this, but, nevertheless, the following opinion, which we have received from a scholastic expert, deserves consideration:

I have no hesitation in saying that since the number of subjects was doubled in 1900, the work of preparation for this examination has been made needlessly severe. An apprentice's hours at the shop are long, and therefore he has only a very limited time at his disposal for study. Many of my pupils find it incumbent on them to sacrifice their weekly half-holiday to books, and even to work on Sundays. Others give up their whole time to the preparation of the subjects after their apprenticeship is completed. What ought to be done? Some contributors to previous Educational Numbers of THE CHEMIST AND DRUGGIST advocate a return to the *status quo ante*; others consider that the requirements are not excessive. I should recommend the omission of geometry and the modern foreign language, but retain algebra, since the use of algebraical symbols and processes is now permitted in arithmetic, and is frequently found useful in solving problems in arithmetic and in physics for the Minor. It has occurred to me that much valuable assistance would be rendered to apprentices and their employers in this direction if the various chemists' Associations scattered up and down the country were each to make special arrangements for classes to be held in their immediate neighbourhood every evening, and, if necessary, also during the day, under their sole superintendence and under the constant supervision of an "Apprentices' Study" Committee, formed from their own number, who would engage the services of a thoroughly competent teacher or teachers, and charge the pupils fees just sufficient to cover the expenses. The classes would not be so large but that individual attention could be given to each boy, and by a judicious arrangement of the time-table different stages of each subject might be taken at different times, and special books studied. Some lads, no doubt, would join before apprenticeship, and others after completing their years of service. This arrangement would tend to relieve the apprentices of a heavy mental strain, and thus make their work during the day more serviceable to their employers. It would also induce parents more readily to put their sons to the trade, if the cost of their tuition were lessened. The matter seems to me worthy of discussion at the meetings of the local Associations, and I trust it will be taken up.

We quite agree with the writer that chemists' Associations would do very good service to the craft by not only discussing his suggestion, but carrying it into effect.

National Insurance Bill.

It was decided on August 3 in the House of Commons to adjourn consideration of the National Insurance Bill until the autumn Session. The Bill, which consists of eighty-seven clauses and nine schedules, has been considered by Committee to the end of Clause 17. This is about sixteen pages of the Bill, which occupies in all seventy-eight pages; but this method of estimating the progress is hardly a fair one, as it may be contended with justice that the first part of the Bill, being the more important, has naturally called for more attention than will be needed by some of the later clauses. The Chancellor of the Exchequer took the opportunity of reporting progress, and said that all parties had contributed towards improving the scheme, and thus ensuring the smooth working of the measure. He noted that the principles which have been decided in Committee are as follows: (1) The scheme is to be compulsory; (2) it is to apply universally to the industrial classes of the country; (3) the voluntary part of the scheme is to apply to all those who wish to enjoy the advantages of the Bill, within a certain limit;

(4) it is to be a contributory scheme; (5) the proportion of the State contribution has been fixed. The benefits have also been defined, and in some important respects have been extended. The sanatoria treatment, for instance, has been extended within the limit of their resources to women, and children of insured persons. The treatment of tubercular cases has also been extended to other methods than that of sanatoria, thus committing the Government to a national campaign against consumption. Mr. Lloyd George also referred to the administration of the benefits of the scheme, and he claimed that the great difficulty relating to the medical profession had been substantially met by the amendment that has been incorporated in the Bill. The rest of the speech was given up to a *résumé* of the difficulties yet to be faced, and the members seemed to be pleased with the frank way in which they were treated by the Chancellor. As far as chemists are concerned, the earlier clauses of the Bill cover most of the debatable points, and it is not until Clauses 42 and 43 are reached that pharmaceutical interests will be again in question. These clauses concern the appointment of the Advisory Committee and the local Health Committees upon which it is desired to have pharmacy represented. There is also a new clause to be brought forward having for its object the constitution of local pharmaceutical committees to advise Health Committees on all matters affecting the arrangements for dispensing medicines and the supply of the necessary appliances for the medical treatment of insured persons. Pharmacists must, however, remember that they are not yet out of the wood, and they must look upon nothing as certain until the Bill becomes an Act. On this account, while being grateful to their Members of Parliament for the help they have received up to now, chemists should be prepared to ask for further help in the course of the autumn Session should occasion require it. On the other hand, the policy of "looking a gift horse in the mouth," which is apparent in some of the communications which we have received from pharmacists, is not to be encouraged. Those who have failed to reach their ideals do not make it any easier for the new generation by their lamentations. Our hope is that the year 1911 will be looked back upon as the time when the tide turned and pharmacy, after much tribulation, began to come into its own.

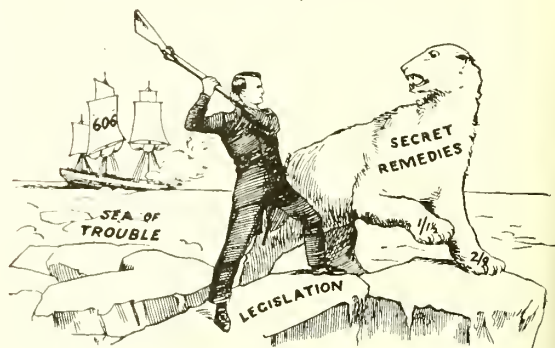
Continental Chemists' Assistants' Salaries.

In those European countries in which pharmacies are by statute limited in number, and where the practice of pharmacy is controlled by Government, there is a growing tendency to place the relations of pharmaceutical assistants to their principals on the same basis as those existing in Government service. The first step in this direction was taken in Austria, where assistants' salaries are not paid to them direct by their employers, but from a central fund. Every owner pays a certain sum into this fund in accordance with the status of his business, and the assistant receives a fixed remuneration, increasing as he grows older, and practically independent of any changes he may make; for if he shifts from one situation to another he suffers no loss in salary or in his annual holiday. This system has some disadvantages, but these are said to be outweighed by the advantages. Thus pharmaceutical assistants in these countries know that only a small percentage of qualified men are likely to become owners of businesses before they are comparatively elderly men, but the existing arrangement ensures that they need not fear the competition of the younger men; on the contrary, each year of service means an increase in his income, and to

many this is better than becoming the owner of a new concession with a rather precarious turnover, coupled with the cares of ownership. In German pharmacy there is a strong feeling in favour of the introduction of a similar arrangement, and the question has been taken up both by the Apotheker Verein and the assistants' organisation. The latest country to definitely adopt a standard scale of salaries is Denmark, where the *pourparlers* between the Danish Pharmaceutical Society and the organisation of pharmaceutical assistants has led to the adoption of a definite arrangement regarding the hours of work and minimum remuneration. Every assistant is to have a fortnight's holiday annually, provided he has been six months in the business. The minimum salaries and hours of work have been fixed as follows:

Business Turnover	Hours of Work per Week	Annual Salary
£400 to £750	... 56-62 ...	£90 to £95
£750 to £1,150	... 55-59 ...	£95 to £100
£1,150 to £1,550	... 53-57 ...	£100 to £105
£1,550 and over	... 51-55 ...	£100 to £110

If the assistant lives indoors, the value of the board and lodging will be reckoned at 33*l.* 15*s.* per annum. Overtime will be paid at the rate of 10*d.* to 1*s.* for every hour.



AFTER THE FAMOUS PICTURE OF NELSON'S ADVENTURE WITH A BEAR (1773).

Harrison's Adventure.

(Suggested by a visit to the "Victory.")

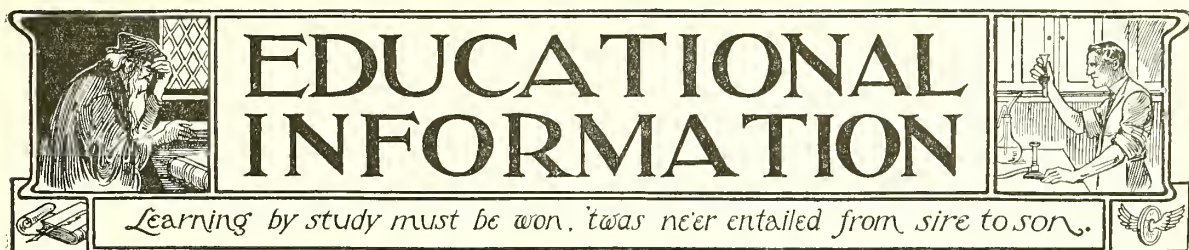
The gallant Harrison essayed,
Like Nelson, to kill off the Bear,
Or with a gentle club persuade
The monster to disclose his lair.

His friends, he found, were much inclined
To frolic o'er the ice-bound floe;
A sea of trouble soon they find,
Deciding what the world should know.

So many interests in that Bear
Are centred, that it passes wit
To know just what to do or dare:
To murder, or just muzzle it.

And thus they minced with careful speech
(While pensive Pentney softly swore),
And passed, that Monster to impeach,
One pious Resolution more.

ST. VINCENT ARROWROOT.—In the course of a Colonial Office report on St. Vincent, it is stated that the central arrowroot-mill erected at New Adelphi by the Government has greatly assisted the growers there, while on several of the other estates small mills have been owned and worked by the holders themselves. This famous industry of St. Vincent has for some time past been in a depressed condition but thanks to the recently formed Arrowroot Growers' and Exporters' Association, the members of which have agreed not to sell arrowroot in the United Kingdom below 2*d.* per lb a price is now being obtained in the inter-colonial market which allows a fair profit to be made, and, generally speaking, the outlook for this industry is brighter than it has been for several years.



Introductory.

ALL intending medical, dental, and veterinary students are required to pass a Preliminary examination in general school-subjects before commencing their purely professional studies. The same applies to pharmacy students in Ireland, but not in Great Britain, although it is desirable. The main design of this examination is to ascertain that candidates possess such a thorough elementary knowledge of the usual branches of a good general education as is necessary to enable them to carry on with advantage and success higher and more special studies in the calling which they intend to follow. The course of study and the range of subjects are therefore, in the main, identical for pharmacy, medicine, dentistry, and veterinary surgery. The chief points of difference between them we shall notice as we proceed in our treatment of each subject. For fuller particulars than we can give here in regard to these examinations, students are referred to "A Guide to Preliminary Examinations," by William Dodds, published by THE CHEMIST AND DRUGGIST (2s. 6d., or 2s. 9d. post-free). It is the work of an experienced teacher, and gives courses for self-instruction in each subject, test-papers framed from the questions proposed at recent examinations, the latest information as to special subjects, and complete sets of papers just published.

The Pharmaceutical Society (G.B.) and General Medical Council do not themselves conduct Preliminary examinations, but accept certificates of other legally constituted examining bodies, under prescribed conditions. The most popular Preliminaries recognised by these two bodies are those conducted by the College of Preceptors and the Educational Institute of Scotland.

The Oxford and Cambridge Local examinations are seldom taken advantage of by private students. Full particulars as to the conditions to be fulfilled in order to obtain a certificate may be had from Dr. Keynes, Syndicate Buildings, Cambridge, and the Secretary, Local Examination Offices, Merton Street, Oxford, respectively.

With regard to the London University Matriculation examination, we may say that for a student who has the opportunities for the work necessary, it is undoubtedly the best Preliminary to take, chiefly because it will enable him to proceed at any future time, should he so desire, to the examinations in medicine and science at that University without the necessity of returning to school-books and preparing for a similar ordeal. The range of subjects (see following page) is much wider than the regulations of the Pharmaceutical Society and the General Medical Council demand, and the standard for a pass so much higher than obtains elsewhere, that the great majority of private students with limited leisure for study, and relying on their own unaided efforts, find it beyond their capabilities, and consequently are compelled to select one of the less difficult examinations, such as that of the College of Preceptors or the Educational Institute of Scotland, and to these our remarks are particularly directed. The regulations relating to matriculation can be obtained free on application to the External Registrar, University of London, South Kensington, London, S.W.

The Pharmaceutical Preliminary Examination.

No candidate will be admitted to the Minor (or qualifying) examination of the Pharmaceutical Society who has not previously passed a Preliminary examination in certain

specified subjects and been registered as an "Apprentice" or "Student." The Society does not itself conduct the examination, but accepts certificates of other legally constituted examining bodies, provided that the examination includes the following six subjects: English grammar and composition, Latin, a modern foreign language, arithmetic, algebra, and Euclid. The list of the certificates at present recognised is printed later (index folio 281).

Candidates may either take all the required subjects at one examination, or they may take part at one examination and the remainder at another. There is no limit to the number of times a candidate may enter for examination, and he may count towards registration the subjects passed at any two (not more) examinations, but all six must be taken under the same examining body.

In addition to the usual class examinations in June and December, the COLLEGE OF PRECEPTORS holds examinations in the subjects of the Preliminary Literary examinations required by the General Medical Council and the Pharmaceutical Society in March and September. The examinations are held in London and at various local centres, a list of which will be supplied, together with a syllabus of subjects, on application to the Secretary, Mr. C. R. Hodgson, B.A., College of Preceptors, Bloomsbury Square, London, W.C. The papers set at previous examinations may be obtained from Mr. F. Hodgson, 89 Farringdon Street, London, E.C.; price by post, 7d. each set.

The EDUCATIONAL INSTITUTE OF SCOTLAND holds examinations in Edinburgh, Glasgow, London, Liverpool, and Dublin simultaneously, four times in the year. Particulars may be had from Mr. S. M. Murray, 34 North Bridge Street, Edinburgh, who will also forward a Calendar containing previous papers for 1s. post-free. We now give a general idea of the scope of the subjects.

English.—Both at the College of Preceptors and the Educational Institute the examiners require a thorough knowledge of the classification and inflexion of words, the rules of syntax, and the analysis of sentences. The papers are of equal difficulty, but we are informed by the Secretary that at the Institute examination it is compulsory for pharmaceutical candidates to show a fair knowledge of history and geography, as these subjects are included in the syllabus under the head of "English." Questions are given on the outlines of British history and the general geography of the world, with more detailed geography of the British Isles and the British Colonies. Candidates at the College of Preceptors examinations will observe that Part I. of the English paper is compulsory and is sufficient for a pass. Part II. is optional, and should not be attempted by those whose time for study is limited.

Latin.—At the English examinations candidates may take either a paper of "unseen" translation or a paper on a prescribed book of Cæsar or Virgil. (At Christmas 1911, Cæsar, "Gallic War," Book VII., 1-51; Virgil, "Æneid," Book IX., 1-524; at Midsummer and Christmas 1912, Cæsar, Book III. or Book IV.; Virgil, "Æneid," Book VII., 1-539.) Each paper contains (a) passages for translation into English, including, in the case of papers on set books, at least one "unseen" passage, (b) grammar and questions arising out of the subjects of the book selected, (c) simple English sentences for translation into Latin. Candidates are expected to attempt all three of the sections (a), (b), (c), and in order to pass they must satisfy the examiners in at least

two of the sections. The Educational Institute requires from all candidates translation from authors not previously announced, and continuous Latin prose, with a knowledge of grammar.

French and German.—The papers in both languages set by the two recognised bodies whose requirements we are considering are very similar, and contain "unseen" passages for translation into English, and demand translation into the foreign language of short idiomatic sentences and a continuous passage, together with a knowledge of grammar.

Arithmetic.—College papers include simple questions on the metric system, but exclude cube root, problems in rate and time in simple interest, compound interest and stocks. The syllabus of the Institute simply specifies the common rules and vulgar and decimal fractions.

Algebra.—College examiners require a knowledge of simple equations, fractions, and easy quadratic equations of one unknown quantity. Alternative questions are set on graphs, but private students, whose time is limited and who did not take up this subject when at school, are advised to neglect them. The papers of the Institute cover practically the same ground, but no graphs have hitherto been given.

Geometry.—Three alternative papers are set by the examiners of the College: (a) Euclid, Books I. and II., with riders; (b) Books I. and III., 1-19, also with riders; (c) a paper on theoretical and practical geometry. The Scotch examiners require a knowledge of the subjects of Books I. to III., with simple deductions, from all candidates. If proofs are offered other than those of Euclid, the order of Euclid's propositions must be adhered to.

NOTE.—The pass-minimum of marks in each subject at the College of Preceptors has been raised from 30 per cent. of the maximum to 33½ per cent.

The examination ought, of course, to be passed before leaving school, but this is very rarely done. In the first place, as a rule, boys do not make up their minds to become apprenticed to the drug-trade until they have left school, or are about to do so, and even then the tendency is to postpone the examination as long as possible. These lads are now drawn from the upper working and lower middle classes, and have been pupils in County Council schools. In fact, in Scotland 90 per cent. at least come from Board schools. The education given in the elementary schools has assisted them very little in the requirements of the syllabus, while in the higher-grade departments, amid a multiplicity of other subjects useless for their present purpose, they have been given a modicum of mathematics, English grammar, and a smattering of French, but no Latin. It has been suggested that if the head-teacher in a day-school knew beforehand of a lad's desire to become a chemist and druggist he might arrange to give him individual attention in the required subjects, but with large classes and a limited staff of teachers this has been found to be impossible. In many towns facilities are provided by the educational authorities for the further instruction of such as have left the day-school. Here Latin is taught, but the pharmaceutical pupil is handicapped in not being able to receive in a class the individual attention he needs for his particular examination.

In these circumstances the only practical advice we can give to an apprentice on leaving the day-school is to engage at once the services of an efficient private tutor in all the subjects; or, where this is not possible, to attend an evening class and pick up all the instruction he is able; and if he can there obtain a fair knowledge of three or four of them—say, arithmetic, algebra, geometry, and English—to present himself for examination in them by one of the recognised bodies—in England, preferably the College of Preceptors. He should then supplement the knowledge he has already acquired of French and Latin with the help of a tutor or some private friend.

The Medical Preliminary Examination.

Intending medical students are required, previous to registration as students by the General Medical Council, to pass a recognised Preliminary examination in the subjects of general education on the same lines as those required for pharmacy, but including in addition the subject-matter of Euclid, Books I.-III., with deductions, and a more severe test in Latin, *all to be passed at one examination.*

Latin.—At the College of Preceptors medical candidates

must take the paper set for pharmaceutical students, together with an "additional paper" containing a more difficult "unseen" passage for translation into English, and an easy continuous passage to turn into Latin. The Educational Institute examiners require translation into English from authors not previously announced, with continuous Latin prose and grammar, from all candidates alike, pharmaceutical, medical, dental, and veterinary.

English History.—The College papers in English history contain questions on three alternative periods: (a) 1066-1485, (b) 1485-1688, (c) 1688-1830. Only one of the three periods may be taken by any candidate. The Institute syllabus prescribes the outlines of British history, but the questions are few and elementary.

Geography.—The English examining body demands a knowledge of the principal facts of mathematical and physical geography, together with a detailed knowledge of one of the continents (in 1912, North America). The Scotch questions take in the general geography of the world, with more detailed geography of the British Isles and the British Colonies. But only two or three questions are given, and they are very easy. Taken as a whole, the Medical Preliminary of the Educational Institute is by far the easiest of any. The only drawback for English students is that, whereas the College of Preceptors forms numerous local centres in all parts of the Kingdom, Liverpool and London are the only English centres for the Institute examination.

The Dental Preliminary Examination.

Dental students must pass the same Preliminary examination as medical students, and, like them, must register as students with one of the Registrars of the General Medical Council, when they begin their dental education.

The Veterinary Preliminary Examination.

The regulations made by the Royal College of Veterinary Surgeons, 10 Red Lion Square, London, W.C., require the candidate for a diploma to pass the Preliminary examination recognised by the General Medical Council. There is now no separate examination of veterinary candidates.

The universities of the United Kingdom conduct their own Preliminary examinations, and those who desire to obtain the degrees of any one of them must pass its examination or (in some cases) its equivalent. As to these information is given in the Calendar of each university.

London Matriculation Examination.

The Matriculation examination of the University of London, referred to on the previous page, provides the "open sesame" to so many professions that the student is strongly advised to enter for it as early in his career as possible. It is also recognised as an entering examination by practically all British Universities. Latin is no longer compulsory in the examination itself, but candidates who intend to pursue pharmaceutical, medical, or dental avocations must include this language if they desire the certificate to be recognised by the licensing authorities.

The subjects are: (1) English; (2) elementary mathematics; (3) Latin, or elementary mechanics, or elementary physics (heat, light, and sound), or elementary chemistry, or elementary botany; (4 and 5) two of the following subjects, if not taken under Section (3): Latin, Greek, French, German, ancient history, modern history, physical and general geography, history and geography, logic, geometrical and mechanical drawing, mathematics (more advanced), elementary mechanics, elementary chemistry, elementary physics (electricity and magnetism), elementary biology (botany), elementary biology (zoology), elementary geology. The University holds the examination at various centres thrice annually—in January, June, and September. The fee for it is 2*l.*, and in entering for it the candidates must obtain from the Principal of the University of London, South Kensington, London, S.W., forms of entry about six weeks beforehand, but full particulars as to this and details of the subjects of the examination will be found in the Regulations for Matriculation. The examination is conducted in London and numerous provincial centres; also in certain cities of the Colonies and India.

The Practice of Pharmacy.

In order to become a chemist and druggist (with permission to use the shorter title "pharmacist") in

GREAT BRITAIN

it is necessary to conform to the requirements for registration made by the Pharmaceutical Society of Great Britain, 17 Bloomsbury Square, London, W.C. These requirements are:

1. The candidate must have passed an approved Preliminary examination, and be registered by the Registrar of the Society as an Apprentice or Student.

2. He must on entering for the Minor (or qualifying) examination at the age of twenty-one years, produce a declaration that he has been practically engaged in the translation and dispensing of prescriptions for three years prior to applying for admittance to the examination.

At present the Society does not compel anyone to pass the Preliminary examination before the three years' practical experience is entered on, but it is, of course, advisable that this should be done, if possible. The following is the official list of the approved Preliminary examinations:

University of Oxford.—Junior or Senior Local examinations; Higher Local examinations; Responsions.

University of Cambridge.—Junior or Senior Local examinations; Higher Local examinations; previous examination.

University of London.—Matriculation examination; Higher School-leaving Certificate; Junior School examination; Senior School examination.

University of Durham.—Junior or Senior Local examinations; Certificate of Proficiency examination.

University of Birmingham.—Matriculation examination.

Universities of Manchester, Leeds, Liverpool, and Sheffield.—Joint Matriculation examination; Senior School examination.

University of Bristol.—Matriculation examination.

Universities of Edinburgh, Aberdeen, Glasgow, and St. Andrews.—Preliminary examination in arts, or medicine, or science; Junior and Senior Local examinations.

University of Dublin.—Public Entrance examinations (for "High Places").

Royal University of Ireland.—Matriculation examination.

University of Wales.—Matriculation examination.

Scotch Education Department.—The Intermediate Certificate or Passes in the Higher or Lower Grade of the Leaving Certificate examination.

Intermediate Education Board for Ireland.—Senior or Middle Grade Certificate examination.

Central Welsh Board.—Honours, Senior or Junior Certificate examination.

Oxford and Cambridge Schools Examination Board.—Higher or Lower Certificate examination.

Educational Institute of Scotland.—Medical Preliminary examination.

College of Preceptors.—First or Second Class Certificate examination.

Persons desirous of obtaining registration as "Apprentices or Students," and of thus becoming eligible to enter for the Minor examination, must deliver with a fee of two guineas to the Registrar, 17 Bloomsbury Square, London, W.C., a certificate of having passed any one of the specified examinations. No certificate is accepted unless all the subjects are included. No candidate is admitted to the Minor examination who has not previously been registered as an Apprentice or Student.

The three years' practical experience in compounding medical prescriptions may be obtained anywhere and anyhow, so long as the declaration to the effect that it has been obtained is signed by a registered pharmaceutical chemist, chemist and druggist, or registered medical practitioner, but it is customary to be apprenticed to a chemist and druggist for three years or more. During the apprenticeship, and after passing the Preliminary examination, the apprentice should attend classes in a technical or other science school in such subjects as chemistry, physics, and botany; physics should not be neglected. It is also advisable to do home study of subjects related to the properties and uses of drugs and chemicals, not merely in view of the qualifying examination, but to become proficient in the business. A list of books is given later in this issue, but the British Pharmacopœia is the chemist's Bible, and apprentices should read it through from A to Z again

and again. A pocket manual such as Gadd's "Synopsis," costing a shilling, is useful to carry about. There are many other little books dealing with the science subjects, which should also be pocket companions—in anticipation of the final course of study which is now customarily taken before entering for

The Minor Examination.

The Council of the Pharmaceutical Society recommends that all candidates before presenting themselves for examination should receive a systematic course of instruction, occupying a period of not less than six months; and that such period of study should include at least sixty lectures in chemistry, eighteen hours' work in each week in practical chemistry, forty-five lectures and demonstrations in botany, and twenty-five lectures and demonstrations in materia medica. A list of schools where such courses may be obtained is given on p. 285, and advertisements of many of them are included in this issue. The secretaries of the schools are always pleased to hear from students, and to supply them with printed pamphlets descriptive of the schools and cost, in some cases giving advice as to what more can be done before entering the school. We advise students to take advantage of such kindness.

Full particulars in regard to the examination itself are given in a pamphlet to be obtained free on application to the Registrar of the Pharmaceutical Society, 17 Bloomsbury Square, London, W.C. It is advisable for students to get this as soon as they enter the drug-trade, certainly when they begin to think seriously of qualifying. The examination is conducted by Examiners appointed by the Pharmaceutical Society, one Board meeting in London and another in Edinburgh. The examinations are the same. The Boards meet in January, April, July, and at the end of September or the beginning of October. Each candidate must give notice and pay the fee of ten guineas to the Registrar in London on or before the 15th day of March, June, September, or December, and he receives notice of the date on which he will be required to present himself for examination. When giving notice (for the first time), a candidate for the examination must have attained the full age of twenty-one years, and must have been registered as an Apprentice or Student. He is also required to produce a registrar's certificate of birth, and a certified declaration that for three years he has been practically engaged in the translation and dispensing of prescriptions. The printed form on which this declaration is to be made can only be obtained from the Registrar. Each candidate must state, at the time of giving notice, whether he desires to be examined in London or in Edinburgh. It does not matter to the Society which he chooses. The choice is usually determined by the place at which the candidate studies, and the recommendation of his teacher, if any.

THE SUBJECTS OF THE EXAMINATION

are set forth in the pamphlet referred to. The following is an epitome of the subjects contained therein:

BOTANY.—(a) *Classification.*—The main divisions of the vegetable kingdom and their most important characteristics, including sub-classes and natural orders of the Angiosperms, description of flowering plants in technical language, and recognition of about fifty named plants. (b) *Morphology, including Anatomy.*—The external form of plants, distinguishing features and common modifications of them, branching and branch systems, phyllotaxis, buds and their arrangement, a general acquaintance with the elements of plant anatomy, and recognition by means of the microscope. (c) *Elementary facts* in connection with the physiology of plants, and the nature of certain plant-constituents; the manner in which plants grow and respond to external stimuli; sexual and asexual reproduction.

CHEMISTRY AND PHYSICS.—Elementary knowledge of (a) physical laws; (b) the chief characteristics of chemical action: elements and compounds; chemical combination; atomic and molecular weights; chemical formulæ and nomenclature; valency; the distinction between metals and non-metals; (c) the general characters of the non-metals, and preparation and typical reactions of non-metallic elements and compounds, with impurities in such of them as are included in the British Pharmacopœia; (d) the metals, and methods of forming oxides and salts; preparation, properties,

adulterations, and contaminations of salts used pharmaceutically; (c) carbon compounds, especially those used medicinally; methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds; molecular formulæ. [Simple problems relating to the weight and volume, under different conditions of temperature and pressure, of elements and compounds concerned in chemical reactions.] **Practical Examination.**—Determination of specific gravities; use of the thermometer and barometer; recognition by tests of the more important non-metallic elements and compounds, metals, and salts; analysis of a mixture containing not more than two metals and two acid radiæles; identification of named organic compounds; volumetric determinations described in the British Pharmacopœia; construction and use of the balance; imperial and metric systems of weights and measures. Assay of cinchona, liquid extracts of belladonna and ipecacuanha; extract, liquid extract, and tincture of nux vomica; opium and its extract, liquid extract, and tincture; and resin in tincture of jalap. Preparation of inorganic and organic B.P. compounds.

MATERIA MEDICA.—Recognition of crude drugs, their varieties, sources, natural orders, modes of collection and preparation for the market, morphological nature, chief active constituents, and practical knowledge of any pharmacopœial tests or processes of assay applied to crude drugs or their official products. A list is given.

PHARMACY.—(a) Operations requiring the use of heat. (b) Disintegration of solid substances; solution, its nature, solvent-power of various menstrua, influences of specified conditions, filtration, expression, principles involved in the dispensing of medicines; processes by which specified official preparations are made; and proportion of active ingredient or crude material in official preparations of specified strong medicines. (c) Knowledge of the Schedule to the Poisons and Pharmacy Act, 1908, and conditions upon which poisons may be sold, with writing the proper entry required on the sale of a Part I. poison, dispensing of poisons, and sale of arsenic.

PRACTICAL PHARMACY AND DISPENSING.—Making of British Pharmacopœia preparations, and compounding and dispensing medicines.

PRESCRIPTIONS.—Reading autograph prescriptions in English or Latin; nosology; calculation of percentages and rendering into good Latin ordinary prescriptions written in English.

The practical portions of the chemistry and pharmacy and dispensing examinations are first taken. If a candidate fails in these he proceeds no further, but may come up again on payment of a fee of three guineas each time. If he pass the practical the candidate is notified when he is to be examined orally in the rest of the subjects. The following is

AN ACCOUNT OF THE EXAMINATION IN JULY.

By A "Square" Man (100/15).

First Day.—I arrived at the seat of our troubles, Galen Place, and after signing my name on an envelope, was drafted to DISPENSING.

1. Supp. iodoform. B.P. Mitte vj.

2. Pil. colocynth. co. ... gr. iv.
Hyd. subchlor. ... gr. j.

Ft. pil. Mitte vj.

3. Liq. plumbi fort. Send ðiv.

4. Quin. hydrochlor. ... gr. xxiv.
Sodii sal. ... ʒij.
Aq. ad ... ʒvj.

ʒss. ex aq. ʒss. qta. qq hora.

5. Ac. arsenios. ... 1 centigram
Ferri redact. ... 6 decigrams
Bismuth. carb. ... 36 decigrams

Divide in pulv. vj.

Everything turned out well.

In the afternoon PRACTICAL CHEMISTRY commenced at 2 o'clock. All the necessary apparatus was provided.

1. Analyse given B.P. liquor. [This I found to be Donovan's solution.]

2. In a dilute mixture of HCl and H₂SO₄ determine the number of grams of each in 1 litre. [This required the preparation of two volumetric solutions, Na₂CO₃ and AgNO₃. I had no trouble with this, and was finished at 4.30 P.M.]

Next day information was sent to me to attend the

Oral, or second day's examination. On arrival, I took my place at 2 P.M. on the funking-form, and there stopped until 2.25 P.M. (N.B.—This was the worst part of the examination), when I was examined as under:

MATERIA MEDICA.—I was shown English aconite, asked constituents and their percentage; next valerian, hydrastis,

serpentry, calumba-root (washed and natural), St. Ignatius beans, nux vomica (constituents, proportion and assay of strychnine in the tincture) (what would I add to prevent the strychnine decrepitating?), amyl alcohol, and finally fresh first-year henbane-leaves.

CHEMISTRY.—Here I was handed a sheet of foolscap with the following questions:

Write manufacturing method of making H₂O₂, HgO, HgCl₂, HgCl₂, NH₃, Na₂SO₃.

How much CO₂ is given off from 10 grams Na₂CO₃, when measured at 51° C. and 710-mm. pressure?

Having done that, I was asked why hydrogen peroxide solution is kept slightly acid. The examiner told me it is not because the peroxide is unstable in neutral solution, but because it is unstable in the alkali it dissolves from the bottle it is kept in. In ORGANIC CHEMISTRY I had to give the mode of preparation and formulæ of acetamide, aniline, nitrobenzene, and ethyl acetate.

PHARMACY.—Recognise soft soap: how made? What used in? Lin. terebinth: preparation? What is it? What is an emulsion? Vaseline: how made? What used for? Pil. asafetida co.: how made? Tr. myrrhæ: how made? Why 90-per-cent. alcohol? What is 90-per-cent. alcohol? What other strengths of alcohol are official? Then followed questions on hard soap, pil. saponis co., dec. aloes co., dec. hæmatox., infusions, etc. The examiner finished by asking the principle of the syphon, and gave questions about separators and various condensers.

BOTANY.—Two flowers, *Compositæ* and *Liliacæ*, to place in natural order, and section of dicotyledonous stem with scattered bundles. What are phloem, cambium, xylem? How many stamens have *Umbellifera* and *Compositæ*? and a few other questions on their fruits, etc. Next, yew to recognise (no flowers on). Where are the flowers borne? Describe woody nightshade, Latin name and natural order. What is respiration?

LATIN PRESCRIPTIONS AND DOSES.—Having got far more than the minimum marks, I think this was made easy. One long script to put into Latin, four to read into English. How much liquor 1 in 24 must be used to make 2 pints solution of mercury perchloride 1 in 1,500. Next, I had to give ten doses, all of poisons.

Congratulations and questions as to my place of study—the Square, etc. Finally, a mad sprint to the post-office.

If comparison with the examination in Edinburgh were needed we have it in another account by a successful candidate (103/21) who is not a "Square" man, but has had to plod through his studies under all the responsibilities of business and making a living. His account is as follows:

DISPENSING AND PHARMACY.

1. Make $\frac{1}{2}$ B.P. quantity of syrup. tolu.

2. Ferri et ammon. cit. ... ʒj.
Spt. chloroformi ... ʒi.
Syr. aurant. ... ʒss.
Aq. ad ... ʒvj.

Misce ft. mist. $\frac{1}{2}$ part three times a day.

3. Zinci sulph. ... gr. x.
Aq. fl. aurant. ... ʒss.
Aq. rosæ ... ʒiij.
Tr. lavand. co. ... mv.

Sig.: The red lotion.

4. Jalap. res. ... gr. ij.
Scammonii ... gr. ij.
Ext. gent. ... gr. j.

Ft. pil. Mitte x

5. Make $\frac{1}{2}$ B.P. quantity mist. ol. ricini.

PRACTICAL CHEMISTRY.

My salt for analysis proved to be ammonium citrate and zinc acetate.

The volumetric was very simple, a solution of oxalic acid being given to estimate grams per 100 grams with potassium permanganate (make own solution).

I duly received notice for the Oral, and give a brief summary of (as far as I remember) the questions asked. For several years I have collected these experiences which have appeared from time to time in the *C. & D.*, and have found them most helpful.

CHEMISTRY.—I had paid great attention to ammonia, zinc and acetic acid, and everything likely to be asked relating to my first day's work. I found it paid me to, my first question being, Composition of the atmosphere. How obtain nitrogen from it? I gave the nitrolim process, as well as ordinary method. This led up to thermometers and barometers. Mercury: what is there peculiar about this element? "Liquid metal," I answered, "belonging to the same group as cadmium and zinc. This led to zinc, as I wished it to, and I had then to give the sources of zinc, extraction of metal,

preparation of zinc oxide, and the source of cadmium. Why did I say the same family as cadmium and zinc? I said, "According to the periodic arrangement they are so arranged." Questions on periodic law followed. Next question was cyanogen; preparation? Hydrocyanic acid (B.P. method and Scheele's method I gave). Potassium cyanide, ferrocyanide, and ferricyanide preparation followed. Next came acetic acid preparation. Formaldehyde: what is it, and how prepared? What follows if formaldehyde is oxidised? "Formic acid," I answered. Formula asked, and told to sit down.

PRESCRIPTION-READING was my second subject. Got a calculation while the examiner took another candidate in translation. The calculation was as follows:

Pil. ipcc. c. seillæ	gr. iij.
Ext. hyos.	gr. j.
Excip.	q.s.

Ft. pil. Mitte vj.

Calculate percentage of opium in each pill. I then commenced reading in unabbreviated Latin a prescription, but the examiner told me simply to translate in the usual way, abbreviated. I had four or five to translate, with simple directions: (a) ʒss. ter in die ex aq. post cib.; (b) ʒss. ter in die ex cyath. vinos. post cib.; (c) ʒss. quart. horis ex cyath. vinos. inter cib. Several doses were asked, and I had finished No. 2 subject.

BOTANY.—The examiner wanted a lot for his money. I had a section of *Pteris aquilina* rhizome to place under the microscope and make a drawing. This was not difficult. I marked all the parts, and awaited the termination of another candidate's examination. I was then shown several fresh specimens: *Bryonia dioica*, *Ethusa Cynapium* (whole plant), *Atropa Belladonna*, *Hyoscyamus niger*, *Anthemis nobilis* (without capitula), and *Solanum Dulcamara*. Then on to the fruits, placing in their orders fennel, tomato, potato; questions on respiration, carbon assimilation, and transpiration following. I was then told to sit down.

PHARMACY.—What is lard?—how obtained, uses, impurities? What bases for ointments are used in the B.P.? What is lanoline?—preparation? Also adeps lanæ hydros, adeps benzoatus: how made? Extracts? Different kinds of ext. aloes barb.: how made? Ext. cimicifugæ: preparation? Why reserve first portion and evaporate second? Questions on Poison Laws followed. Vin. colchici and tinct.: preparation and strength? A list of preparations was given, and I was asked to call out one or two, according to position in the Poisons Schedule.

MATERIA MEDICA.—Beautiful specimens of guaiacum resin were shown; was asked preparation, source, active principles? Then *Astragalus gummiifer*, and order. Definitions of a gum, gum-resin, balsam, etc., followed. Benzoin was next shown in very large pieces; was asked variety? Answered "Sumatra." What is the Siam like? Then shown ammoniacum. "What is it?" Was it not Siam benzoin? "No." "Why?" I broke a piece and moistened it; turned milky. This led up to emulsifying-agents. How many did I know? I was then taken along the table of specimens, which presented no difficulty, as it was my favourite subject.

This finished my examination. I had the satisfaction of knowing I only dropped one mark throughout the examination, and that one was in botany. The usual handshake with the Chairman followed, to my intense relief.

How these gentlemen got to know the marks they obtained is as puzzling as the system of marking. Candidates who do well are generally asked to come up for

The Major Examination,

which is open to all who have passed the Minor, on payment of a fee of three guineas (it costs the Society about four to examine each candidate). The Major is only held twice a year—April and July only—in Edinburgh and London. The subjects are botany, chemistry and physics, and materia medica on a more advanced scale than the Minor. There is a written examination in each of the subjects, and a practical, but if necessary the Board may also examine the candidates orally. Those who pass the examination are registered as Pharmaceutical Chemists. We append an article on the examination, which should be helpful to inquirers:

MAJOR STUDY AND EXPERIENCE.

By a Night-class Student (112/25).

Frequently, when a young man has been successful in the Minor he is fully determined to continue his studies and ultimately possess the Major diploma. But as time wears on, and enthusiasm dies down, the spirit of laziness whispers in his ear that the Major is not really worth the trouble, and that he will have enough to do to look after business matters. Besides that, the Major will cost money, and in many

cases the Minor has swallowed up all the money which the average pharmacy student possesses. If he has the capital, he does not see any possible return for the time and money expended. I have passed both the examinations without having lost a day's salary over either.

After passing the Minor, which I did after two years' study at evening classes, I was fortunate in obtaining a situation where the hours were short. I finished early in the evening, and had a half-holiday on Saturday afternoon, besides having no Sunday duty. These were ideal hours for my purpose. I did not commence my studies at once after passing the Minor, as I felt I would be none the worse for a rest after my long period of hard work. I commenced earnestly at the beginning of the winter, devoting my attention principally to light, heat, organic and inorganic chemistry. Then I studied botany and materia medica, still attending to the practical organic and inorganic chemistry. During the summer vacation I paid attention to the extensive classification in botany required for the Major, but I did not work very hard during this period.

At the beginning of the following winter I started to study electricity and magnetism, and still continued to work at inorganic and organic chemistry. I also made myself thoroughly acquainted with the various life-histories, which I found a most troublesome study. The next three months I devoted to revision, and paid attention to materia medica, in which I was never very proficient, the reason being, I suppose, that one requires to have a very good memory, and I cannot say I am fortunate in possessing one. After that I made my successful attempt at the Major.

The examination is a written and practical one. I was satisfied with my work in the written examination. The practical part of the examination is not such a trying ordeal. In practical materia medica the first problem I had was to cut sections of the substance provided so as to show characters by which it could be recognised. I had no difficulty in recognising it as gentian-root before I proceeded to cut it, and its microscopical characters were well known to me. It was in splendid condition for cutting, and I cut a transverse and a longitudinal section. Then I sketched the structure. The second problem was to examine the powder supplied, and report upon its purity, and state how it was recognised. The powder was senna, and it seemed to be adulterated with calcium carbonate. I was not quite certain that there was effervescence with acetic acid, but I reported that I suspected it.

Practical botany consisted of three things to do, the first one being to cut longitudinal and transverse sections of the part provided, pointing out characteristic features. The transverse section showed clearly bicollateral bundles, showing that it was the section of a cucurbitaceous stem. The stem was very hard and difficult to cut, and I did not make a very good longitudinal section. The transverse section was quite good, however. After sketching and labelling the parts, I left them for inspection. I mounted the sections in 50 per cent. glycerin. The second question was to classify the plants provided, giving reasons. The plants belonged to the natural orders *Labiata* and *Ranunculaceæ*. The third problem was to describe the substance given. This was a date.

The last day was occupied entirely with practical chemistry. The first part consisted of a salt. I found this contained mercury, lead, and zinc, also formate, acetate, and chloride. Then the candidates adjourned for luncheon, provided by the Pharmaceutical Society, after which I had to determine a molecular weight. This was done by weighing a quantity of substance given and dissolving in water. Excess of decinormal sodium hydroxide solution was then added (I had to make this). I found out how much was fixed by means of decinormal hydrochloric acid, which was supplied. From this the molecular weight was calculated. I concluded the day's work by taking a melting-point. A few days later I received my certificate.

The examination lasts three days, and is a heavy strain upon a nervous candidate. On the whole, I think it is better to get the examination over at once. The real benefit in studying for the Major consists not in the actual possession of the certificate, but in the acquirement of the extra knowledge. Few who have not done the work can realise the amount of ground which must be covered before the candidate can say he is prepared for the examination, although many seem to pass examinations with the minimum amount of study. No doubt, when one can afford it, it is better to attend day classes. Still, when one has good health and some luck, day classes are unnecessary.

This writer correctly states the case as to the value of the Major; it is a hall-mark of value at all times, and of special value sometimes. Without it some positions cannot be got, no matter what a man's knowledge may be. Such positions are apt to come within a man's grasp when he is thirty or more; if he has not the Major diploma, they go by. Hence the time to take the Major is as soon after the Minor as possible. *But do not neglect the business*

side of pharmacy. Keep learning about business all the time you are behind the counter. How? Read THE CHEMIST AND DRUGGIST every week, and see how other men are making pharmacy a commercial success.

IRELAND.

The laws controlling the practice of pharmacy and the retail drug-trade in Ireland differ from those of Great Britain, and their administration is entrusted to the Pharmaceutical Society of Ireland, 67 Lower Mount Street, Dublin. There are two distinct classes in the trade in Ireland, (1) pharmaceutical chemists, and (2) chemists and druggists and registered druggists. The first class are entitled to keep open shop for retailing and dispensing poisons and compounding and dispensing medical prescriptions; while the second class may keep open shop for retailing and mixing poisons, but they may not compound or dispense medical prescriptions. The first class are registered under the Pharmacy Act, 1878, and the second under an amending Act of 1890. Persons with the title "chemist and druggist" were in business as such before 1890, since when all who desire to trade similarly are examined, and such persons may use the title "Registered Druggist."

PHARMACEUTICAL CHEMISTS.

The regulations for candidates for this qualification are published in pamphlet form by the Pharmaceutical Society of Ireland, and copies may be obtained on application from the Registrar, 67 Lower Mount Street, Dublin. The following are the conditions in brief:

PRELIMINARY EXAMINATION.

To be passed prior to four years' service at pharmacy. The subjects are Latin, English, arithmetic, algebra, geometry, elementary theoretical chemistry. The candidate must pass in one of the following optional subjects: Elementary physics and mechanics, the rudiments of botany, French, German, or any modern language.

A candidate who obtains 70 per cent. of total marks, and not less than 50 per cent. in each subject, is awarded a pass with honours.

The examination is held at Dublin on the first Thursday and following day in January, April, July, and October, at 11 A.M. Candidates must give notice in their own writing to the Registrar at least fourteen clear days before such Thursday, accompanying such notice with a receipt for 2l. 2s. previously paid into the Bank of Ireland to the credit of the Society, and a Registrar's certificate of birth. The Society accept in lieu of this examination certificates of having passed any one of the following examinations:

The Matriculation or Preliminary examination of the University of Dublin, Public Entrance examination (large certificate).

The Royal University of Ireland, Matriculation examination.

The Royal Colleges of Physicians and Surgeons, Ireland, Preliminary examination.

The Intermediate Education Board for Ireland, Junior, Middle, or Senior Grade examinations in English, Latin, arithmetic, algebra, geometry, and Greek, or a modern language.

The next stage is

THE LICENCE EXAMINATION.

The candidate must be twenty-one years of age and produce a declaration that he or she has served a *bona-fide* engagement for a term of four years as apprentice or assistant with and in the sole employment of a pharmaceutical chemist, chemist and druggist of Great Britain, or an apothecary, or a firm of legally qualified pharmaceutical chemists, chemists and druggists of Great Britain, or apothecaries, in an open shop, and the candidate must spend the business day with his employer. This latter part of the regulation became necessary owing to candidates spending a few hours daily with a pharmaceutical chemist and then getting the necessary declaration of service.

The candidate must have attended a course of practical chemistry of not less than three months' duration in the laboratory of an approved institution, and have actually worked at the bench for 100 hours; also a course of lectures on botany and materia medica at some school recognised by the Pharmaceutical Society.

The schools referred to are:

- * Pharmaceutical Society of Ireland, School of Chemistry.
- * School of the Pharmaceutical Society of Great Britain, Cecilia Street School of Medicine, Dublin.
- * City of Dublin Technical Schools.
- * Government School of Science, South Kensington.
- * Queen's University, Belfast.

* Queen's University, Cork.

* Queen's University, Galway.

Royal College of Science for Ireland, Dublin.

Royal College of Surgeons in Ireland, Dublin.

Trinity College, Dublin.

Anderson's College Medical School, Glasgow

* Royal Academical Institution, Belfast.

* The Municipal Technical Institute, Belfast.

* Mr. Templeton's School of Scientific Method and Chemistry, Belfast.

* Crawford Municipal Technical Institute, Cork.

Also a course of botany and materia medica at one of the above institutions indicated by an asterisk, or at the School of Physic, Trinity College, Dublin. The following are

THE SUBJECTS OF THE EXAMINATION:

Botany.—Recognition of the principal indigenous plants used in medicine, their natural orders, and characters of their several parts.

Materia Medica.—Recognition of B.P. drugs; their characters, active principles, sources, official preparations, and adulterations.

Chemistry.—Elementary laws of chemistry and physics, including equations. Recognition of B.P. chemicals; the processes by which they are obtained; qualitative analysis (including B.P. tests) and volumetric analysis; and a practical examination in these subjects. (The Council recommends Corbyn and Stewart's "Physics and Chemistry.")

Practical Pharmacy.—Translation of Latin prescriptions, detection of dangerous doses, and compounding and dispensing. Processes of making and recognition of B.P. non-chemical preparations, and an intimate knowledge of the Sale of Poisons (Ireland) Act.

The examination is oral, practical, and in writing. The minimum pass percentage in pharmacy is 50, and in botany, materia medica, and chemistry 40 each, with 55 per cent. over all. Honours is given to those who take 70 per cent. of the total marks, with not less than 50 per cent. in any subject.

The examination is held at Dublin on the second Wednesday and following day of January, April, July, and October, at 11 A.M. Candidates must give notice to the Registrar fourteen clear days before the first day of the examination, accompanying the notice with a receipt for 5l. 5s. which has been paid into the Bank of Ireland to the credit of the Society. They must also forward the Preliminary certificate and certificates respecting experience and lectures required by the regulations. The necessary forms can be obtained from the Registrar, and application should be made well in advance of the time required for their lodgment. The examination is written, practical, and oral. The questions set at all the written examinations of the Society are printed in the Calendar, which may be obtained from the Registrar for 2s., postage extra.

There is also an examination for *assistants to pharmaceutical chemists*, and such assistants as shall pass this examination shall be competent to transact the business of a licentiate of the Pharmaceutical Society in his temporary absence, but shall not be entitled to conduct a business or to keep open shop on their own account. The candidates must have been engaged at practical pharmacy for at least four years. The fee for this examination is 2l. 2s., and the subjects are prescription reading and translation, practical dispensing, materia medica and quality of specimens, pharmacy (which is chiefly recognition of pharmacopœial preparations which are not chemical), and the laws as to the sale of poisons.

REGISTERED DRUGGISTS.

Every person who has served a term of not less than four years as an apprentice or assistant to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary keeping open shop is eligible for entry to this examination, which is held in Dublin and Belfast (if twelve candidates enter for the latter) on the second Tuesdays of January, April, July, and October. Application has to be made to the Registrar at least fourteen days before the date of the examination, with the necessary certificates of service and a receipt for the examination-fee (2l. 2s.) paid to the Bank of Ireland to the credit of the Society. An additional registration-fee of 2l. 2s. has to be paid on passing the examination. The subjects of the examination are:

English orthography and composition.

Arithmetic and the weights and measures of the British Pharmacopœia.

The appearance and properties of the various drugs and chemicals in general use.

The Sale of Poisons (Ireland) Act.

The fee for re-examination is 10s. 6d. Successful candidates obtain the title "Registered Druggist," and may carry on business as such in the sale and mixing of poisons

but they may not compound or dispense medical prescriptions. They may serve for two years with a pharmaceutical chemist, and, having passed the Preliminary examination, may enter for the Licence examination.

APOTHECARIES' ASSISTANTS' CERTIFICATES.

The Apothecaries' Hall of Ireland and the Society of Apothecaries, London, have long-standing statutory powers to grant certificates to persons who desire to act as assistants to apothecaries in compounding and dispensing medicines for them. These certificates do not authorise the holders to carry on business on their own account as chemists and druggists, but they are sought after, and the following are, in brief, the conditions upon which they are conferred:

LONDON.—Candidates for the Assistants' examination of the Society of Apothecaries, Water Lane, Blackfriars, London, E.C., or others who think of studying for it, should write to Mr. Frank Haydon, L.R.C.P., Secretary to the Court of Examiners, at that address, for a copy of the "regulations," which contains the forms of certificates required to be filled in and full particulars in regard to the examinations. These are (1) a practical examination in the compounding and dispensing of medicines, and (2) an oral examination in chemistry, materia medica, and pharmacy, and the translation of prescriptions. Examinations are held in January, April, July, and October yearly, and the fee is 5*l.* 5*s.*, which must be paid fourteen clear days before the date of the examination. It is necessary that candidates shall have had six months' instruction in practical pharmacy before entering.

DUBLIN.—The examination for the certificate of assistant granted by the Apothecaries' Hall of Ireland, 40 Mary Street, Dublin, is held on the first Friday of each month, except August. Candidates must be eighteen years of age, and have spent two years at practical pharmacy under the superintendence of a registered apothecary or pharmaceutical chemist, and show that they are of good moral conduct. The subjects of the examination are: Practical and theoretical pharmacy, materia medica, antidotes for poisons, pharmaceutical chemistry, and the metric system of weights and measures. Notice must be given and the fee of 2*l.* 2*s.* paid to the Secretary at the above address at least seven days prior to the examination.

The National Association of Medical Herbalists holds examinations in herbal science twice yearly (January and June) in various centres (Manchester, Southport, and London). Last year there were eighteen candidates, of whom eleven were successful. The Association has also established this year a college at 11 Scarsbrick Street, Southport, for the purpose of providing training in regard to herbal treatment. Further particulars can be obtained from the Secretary, Mr. C. Burden, 16 Bridge Street, Worcester.

SCHOOLS OF PHARMACY.

The pharmaceutical training available at the various teaching institutions is outlined briefly below. In many cases further details are given in our advertisement columns, but it is generally advisable to apply for a syllabus to the Secretary of the school selected.

London.

The School of Pharmacy.—Staff: BOTANY—Lecturer: Mr. F. Cavers, D.Sc. CHEMISTRY AND PHYSICS—Professor A. W. Crossley, D.Sc., Ph.D., F.R.S., Sec.C.S. (*Dean*). Assistant Lecturer: Mr. C. H. Warner, B.Sc., A.I.C. Demonstrators: Mr. C. H. Hampshire, B.Sc., Mr. Sydney Smith, and Mr. W. R. Pratt. PHARMACEUTICS—Professor Henry G. Greenish, F.I.C., F.L.S. Demonstrator: Mr. H. G. Taylor. Systematic courses for the Minor and Major examinations begin on October 4, the former course continuing until the end of June and the latter until the end of March 1912. Students may, however, enter the school at any time and for any subject or part of the course, or for special courses. The fee for the elementary course is 32*l.* 11*s.*, or 30*l.* to student-associates of the Society, and for the advanced course 18*l.* 18*s.*, or 18*l.* to student-associates or members of the Society. Additional term for students who have completed the elementary course, 6*l.* 6*s.* Summer term for students who have completed the advanced course, 4*l.* 4*s.* The special shorter courses of six and three months cost 22*l.* and 11*l.* respectively.

London College of Chemistry, Pharmacy, and Botany.—The old-established South London School of Pharmacy (founded by Dr. Muter in 1866) is now incorporated with this college. Principals: Mr. Henry Wootton, B.Sc., and Mr. A. Kirkland, Ph.C. A course for the Minor begins on September 13; fee, 10*l.* 10*s.* Others of three months' duration begin early in January and April; fee, 9*l.* 19*s.* 6*d.* Six

months' Major course commences on October 16; fee until April examination, 13*l.* 2*s.* 6*d.* Revision course for the October Minor starts on August 16; fee, 5*l.* 5*s.* Evening classes and Preliminary courses are also held. Courses for the Apothecaries' Assistants' examination commence on August 16 and in October, January, and April; fee for full course (six months), 10*l.* 10*s.*; for term of three months, 5*l.* 5*s.* Address, 361 Clapham Road, London, S.W.

South of England College of Pharmacy.—Principal: Mr. H. Lucas, Ph.C., F.C.S. Staff: Mr. J. S. White, Ph.C., Mr. H. E. Archer. Minor courses of three months' duration begin on September 28 and early in January and April; fee 9*l.* 9*s.*, or two terms for 17*l.* 6*s.* 6*d.* Tutorial class starts on August 12 for the October examination; fee, 5*l.* 15*s.* 6*d.* Major courses extend from October to April (day), fee 15*l.* 4*s.* 6*d.*, and October to July (evening), fee 8*l.* 8*s.* Evening classes commence on October 3, and correspondence classes are also conducted; fees, from 1*l.* 1*s.* per term. Six-month and three-month courses are given for the Apothecaries' Assistants' examination; fees, 10*l.* 10*s.* and 5*l.* 15*s.* 6*d.* respectively. Address, 186 Clapham Road, London, S.W.

Westminster College of Chemistry, Pharmacy, and Botany.—Principal: Mr. G. S. V. Wills, Ph.C. The college has a botanic garden of over an acre. Courses of instruction for the Minor, Major, and Apothecaries' Hall examinations are available. The session is divided into four courses—viz., August, October, January, and April. Evening classes are held on Tuesdays and Thursdays from 6 to 9 P.M. A new prospectus is in the press. For full particulars address the Principal, 402 Clapham Road, S.W.

City of London College.—Courses are held preparatory for the examinations of the Pharmaceutical Society. For particulars apply to Mr. David Savage, Secretary, White Street and Ropemaker Street, Moorfields, London, E.C.

South-Western Polytechnic Institute.—Evening classes for Minor and Major students are provided here. The sessional fee for a complete course is 25*s.*; separate subjects, 5*s.* to 10*s.* each. Address, Manresa Road, Chelsea, S.W.

West Ham Municipal Technical Institute.—Evening classes are held in pharmacy, materia medica, and dispensing; fee, 35*s.* per course. Principal: Mr. A. F. Hogg, M.A.

The Provinces.

BARROW-IN-FURNESS.

Technical School.—The chemistry classes are suitable for pharmaceutical students. Secretary: Mr. W. Hutchinson, Town Hall.

BATH.

Bath and West of England College of Chemistry and Pharmacy.—Principal: Mr. David J. Williams, Ph.C., F.C.S. The new term, including foundation course, begins on September 4; fee, 9*l.* 9*s.* The fee for the January or April term is 8*l.* 8*s.* Preparatory postal tuition is offered; fees, 1*l.* 1*s.* to 5*l.* 5*s.* Evening classes are held; fees, 1*l.* 1*s.* to 2*l.* 10*s.* 6*d.* Major courses, three months 6*l.* 16*s.* 6*d.*, and six months 12*l.* 12*s.* Apothecaries' Assistants' course, six months 9*l.* 9*s.*, three months 5*l.* 5*s.* Address, 6 Cleveland Place East, Bath.

BIRMINGHAM.

Birmingham and Midland College of Chemistry, Pharmacy, and Botany.—A short special course begins on August 21. Other terms start October 3 and early in January, April, and July. Major course and afternoon and evening classes are also held. Classes are also held for the Apothecaries' Hall examinations. Particulars from the Principal, Mr. G. L. Scott, Ph.C., 45 Newhall Street.

Birmingham Municipal Technical School.—Courses in chemistry for pharmacy students are given on Wednesdays, from 2.30 to 5.30 P.M. by Messrs. W. Russell, D. F. Twiss, and A. W. T. Hyde; session fee, 5*s.* for the first year, 7*s.* 6*d.* for the second, and 10*s.* for the third. The C. J. Woodward Memorial Prize of 3*l.* 10*s.* is awarded to the student who does best in the sessional examination of the second year. Evening classes in elementary botany are held also; fee, 2*s.* 6*d.* Secretary: Mr. Geo. Mellor, Suffolk Street.

University.—Instruction in pharmaceutical subjects is given. Dr. Percy F. Frankland, Pres.C.S., is the Professor of Chemistry.

BRADFORD.

Technical College.—The pharmaceutical course for the Minor extends over two years (afternoon and evenings). The sessional fees are 5*l.* 10*s.* (day course) and 7*s.* 6*d.* (evening course). Mr. W. West, F.L.S., pharmacist, lectures in botany, materia medica, and pharmacy. Head of Department: Professor W. M. Gardner, M.Sc.

BRIGHTON.

Technical College.—A pharmaceutical course for Minor students can be obtained at this college. For particulars apply to the Principal, Dr. W. Beckett Burnie, D.Sc., Richmond Terrace.

BRISTOL.

University.—The new wing (costing 50,000*l.*) containing the chemistry department is now open. A complete Minor course (day) is provided, beginning in October and continuing to July; fee, 14*l.* 14*s.* Mr. O. C. M. Davis, B.Sc., M.Sc., F.I.C., Ph.C., is the lecturer in pharmaceuticals. For full particulars apply to the Registrar, Mr. James Rafter.

Merchant Venturers' Technical College.—Principal: Professor J. Wertheimer. Evening classes in botany, chemistry, and physics suitable for pharmaceutical students are held. Fees, 5*s.* and 7*s.* 6*d.* for each class.

DERBY.

Technical College.—Principal: Mr. F. W. Shurlock, B.A., B.Sc. Mr. S. Taylor, Ph.C., gives instruction in pharmacy and materia medica on Wednesdays. Fee, 1*l.* 1*s.* per term. Chemistry and botany classes are also available.

EXETER.

Royal Albert Memorial College.—Principal: Mr. A. W. Clayden, M.A. Day or evening classes in chemistry, physics, and biology can be obtained here.

HUDDERSFIELD.

Technical College.—Full courses (day and evening) are held in preparation for the Minor examination. The instructor in pharmacy and materia medica is Mr. A. Akam, Ph.C. Fees: Day course, 6*l.* 6*s.* per annum, and evening classes (chemistry, botany, and physics), 15*s.* 6*d.*, with an extra fee of 25*s.* for materia medica and pharmacy.

LEEDS.

College of Pharmacy.—Principal: Mr. F. Pilkington Sargeant, Ph.C., F.C.S. Full-time, part-time, weekly, and evening classes are held, also a ladies' class. The winter session begins on October 10, and full-time courses commence next January and April. Fees: full time, 14*l.* 14*s.* for six months, 8*l.* 8*s.* for three months; weekly or evening, 4*l.* 4*s.* for six months; ladies', 9*l.* 9*s.* for six months.

Central Technical School.—Head-master: Mr. R. E. Barnett, B.Sc. A Minor course covering two sessions on three evenings a week commences on September 18. Fee, 3*l.* per session. Preparatory course, 7*s.* 6*d.* per session. Mr. J. H. Gough, Ph.C., undertakes the special instruction in materia medica and pharmacy. Address, Leeds Institute, Cookridge Street.

LEICESTER.

Municipal Technical School.—Students are prepared in all subjects of the Minor examination by special courses arranged with the co-operation of the Leicester Chemists' Association.

LIVERPOOL.

School of Pharmacy.—Principal: Mr. H. Humphreys Jones, F.C.S., Ph.C. A short revision course starts on August 15; fee, 4*l.* 4*s.* The full winter term begins on September 12 and continues till Christmas. Courses also begin in January and April; fee, 9*l.* 9*s.*, or for two consecutive courses, 16*l.* 16*s.* Part-time classes for beginners held on Wednesdays from 3 to 10 p.m., beginning September 13, and for advanced students on Tuesdays, commencing September 12; fee for course, 3*l.*, or session, 7*l.* 10*s.* Address, 18 Colquitt Street.

University.—Complete courses for the Pharmaceutical Society's examinations commence each year in October. The Junior course is adapted to the Minor, and the Senior course is suitable for the Major. Courses in chemistry, botany, materia medica, and pharmacy may be paid for separately or a composition-fee of 18*l.* 18*s.* for the session's pharmacy course. Mr. Prosper H. Marsden is the lecturer in pharmacy and materia medica. For particulars apply to the Registrar.

MANCHESTER.

University.—The professional staff of the Pharmaceutical Department consists of Dr. E. Rutherford, F.R.S. (physics), Professors H. B. Dixon, F.R.S., and W. H. Perkin, F.R.S. (chemistry), Dr. R. B. Wild, M.Sc., M.R.C.P. (materia medica and pharmacy), Dr. F. E. Weiss and W. H. Lang (botany), and Mr. James Grier, Ph.C., M.Sc. (pharmacy and pharmacognosy). The work for the Minor or Major examination extends over one winter session; fee, 15*l.* 15*s.* per session. Summer sessions can also be taken; fee, 4*l.* 4*s.* The degree of B.Sc. in pharmacy is granted after taking a three years' course subsequent to matriculation and passing special Intermediate and Final examinations.

Northern College of Pharmacy.—Principal: Mr. Geo. Clayton, Ph.C., F.C.S. A short revision course for the October Minor starts on August 21; fee, 4*l.* 14*s.* 6*d.* Four-month and seven-month courses commence simultaneously on September 4; fees, 10*l.* 10*s.* and 15*l.* 15*s.* respectively. Afternoon, once-a-week, and evening courses commence the first week in September and January; fees, 2*l.* 10*s.* to 4*l.* 4*s.* Courses of three months' duration commence in October,

January, and April; fee, 9*l.* 9*s.* Major courses are also given. Address, 100 and 102 Burlington Street, Manchester.

Manchester College of Pharmacy.—Director: Mr. C. Turner, Ph.C., 225A and 227A Oxford Road.

NEWCASTLE-ON-TYNE.

North of England School of Chemistry and Pharmacy.—Principal: Mr. J. Stableford Hill, Ph.C. A short course for the October examination begins in August; fee, 5*l.* 5*s.* Three months' terms commence on first Monday in October, January, and April; fee, 8*l.* 8*s.* Evening (three per week) and Wednesday afternoon classes are held; fee, 3*l.* 3*s.* per term. Major course, 7*l.* 7*s.* per term. Address, 55 Northumberland Street.

NOTTINGHAM.

School of Pharmacy.—Principal: Mr. S. Royce, Ph.C. Day courses for the Minor begin on September 5 and at the commencement of each quarter. Afternoon and evening classes are also held. For particulars apply to the Principal at 13 Victoria Street.

University College.—Organised evening courses are held preparatory for the Minor examination. Evening sessional fee: for course, 10*s.* 6*d.*; for a single class, 7*s.* 6*d.* Registrar: T. P. Black, M.A., Ph.D.

PLYMOUTH.

Municipal Science Schools.—Principal: Mr. J. B. Brown, B.Sc. The evening pharmaceutical courses in chemistry and botany cover four years. Fee, 10*s.* per session.

SOUTHAMPTON.

Hartley University College.—Principal: Dr. Speneer W. Richardson, M.A. Courses of chemistry, botany, and physics suitable for the Minor and Major examinations can be arranged for. Several good scholarships are offered.

STOKE-ON-TRENT.

North Stafford School of Chemistry and Pharmacy.—Principal: Mr. E. Griffiths, Ph.C., Kidsgrove, Stoke-on-Trent.

WOLVERHAMPTON.

Municipal Science and Technical School.—Day and evening classes in chemistry, physics, and botany are available for students of pharmacy.

Scotland.

ABERDEEN.

Robert Gordon's College School of Pharmacy.—Teacher: Mr. Gilbert Simpson, Ph.C. Ordinary courses for the Minor begin early in October, January, and April; fee, 7*l.* 7*s.*, and 6*l.* 6*s.* per term after the first. Evening classes are also held; fees, 10*s.* to 1*l.* 1*s.* per subject. Particulars concerning additions to the school were given in our issue of last week (index folio 231).

EDINBURGH.

Royal Dispensary and School of Pharmacy.—Principal: Mr. William Duncan, Ph.C., F.C.S. A revision course commences in August. Full terms begin in October, January, and April; fee, 8*l.* 8*s.* per term. Evening classes (Mondays, Thursdays, and Fridays, at 8.30) begin in October; fee, 3*l.* 3*s.* per term of three months. Major course (three months); fee, 10*l.* 10*s.* Address, 21 West Richmond Street.

Central School of Pharmacy.—Principal: Mr. W. Beverley Cowie, Ph.C., F.C.S. Complete day courses for the Minor begin early in October, January, and April; fee, 8*l.* 8*s.* per term. Evening classes are also held; fee, 3*l.* 3*s.* per term. There is also a short revision course for the October Minor beginning this month. Address, 26 Clyde Street, Edinburgh.

Heriot-Watt College.—Principal: Dr. A. P. Laurie. Mr. William Duncan, Ph.C., F.C.S., lectures on pharmaceuticals on Tuesday evenings at 8.30, beginning on September 26. The fee is 5*s.* per session. Complete day courses in chemistry and physics. Evening courses in chemistry, physics, botany, and pharmaceuticals. Address, Chambers Street, Edinburgh.

GLASGOW.

School of Pharmacy.—Principal: Mr. John Lothian, Ph.C., Medallist of the Pharmaceutical Society. Assistants: Messrs. Malcolm Irvine, Ph.C., Malcolm MacKinnon, M.A., James Tulloch, M.A. Day and evening classes for the Preliminary, Minor, and Major examinations are held. A short tutorial day course for the October examination begins on August 14; fee, 4*l.* 4*s.* The winter session begins October 2, and comprises three and six months' day course for Minor; fee, 8*l.* 8*s.* per quarter. General and advanced evening classes for Minor; fees, 1*l.* 1*s.* to 3*l.* 3*s.* per quarter. Evening classes on Thursday and Friday evenings for Preliminary examination begin September 21; fee (six subjects), 1*l.* 1*s.* per term. Address, Blythswood Chambers, 180 West Regent Street.

Glasgow and West of Scotland Technical College.—A three years' course for the Minor begins in September; fees, 2*l.* to 3*l.* 5*s.* per year. Classes in pharmaceutical subjects may

be taken separately, and cost 10s. to 30s. per year. Full particulars can be obtained from the Director and Secretary, Technical College, Glasgow.

The proposals by the University of Glasgow for the institution of a degree in pharmacy have failed to mature.

Ireland.

The educational establishments referred to below provide approved classes of instruction in certain subjects for the Licence examination of the Pharmaceutical Society of Ireland.

Pharmaceutical Schools of Chemistry, Botany, and Materia Medica.—Directors: Chemistry School, Professor P. Kelly, L.P.S.I.; Botany and Materia Medica School, Dr. T. Mather Thompson, L.P.S.I., and Mr. A. K. Henry, B.A., T.C.D. The fees for courses to meet the Society's regulations are: Practical chemistry (six months), 6*l.* 6*s.*; practice course (three months), past students, 2*l.* 2*s.*, students of other schools, 3*l.* 3*s.*; botany and materia medica (three months), 2*l.* 2*s.* The winter course begins on October 1. The practical chemistry class is held on Monday, Wednesday, and Friday evenings. A day class (three months) begins on April 1; fee, 6*l.* 6*s.* A day practice course also begins in

April. The botany and materia medica classes are held on Tuesday and Thursday evenings, with occasional Saturday demonstrations. Printed particulars can be had by applying to the Registrar, 67 Lower Mount Street, Dublin.

Belfast Municipal Technical Institute.—Full courses of lectures and practical work are provided in inorganic chemistry, organic chemistry, botany, materia medica, and pharmacy in the Pharmaceutical Section of the Pure and Applied Chemistry Department. For particulars apply to the Principal.

School of Scientific Method and Chemistry, The Gables, Botanic Avenue, Belfast.—Principal, Mr. S. Templeton, Assoc. R.C.S., F.I.C.; Vice-Principal, Mr. James A. Whitla, M.P.S.I. Full courses of instruction for the Licence examination of the Pharmaceutical Society begin on September 4 and January 2. Fees: Chemistry, 1*l.* 1*s.*; practical chemistry (100 hours), 4*l.* 4*s.*; botany, 1*l.* 1*s.*; materia medica, 1*l.* 1*s.*; pharmacy, 1*l.* 1*s.* Short revision courses, in all subjects, are conducted daily, beginning two months previous to each Licence examination; fee, 1*l.* 1*s.* and upwards. Classes are also conducted for the Pharmaceutical Preliminary, Pharmaceutical Assistants', and Druggists' Licence examinations.

Medicine and Surgery.

THE practice of medicine and surgery in Great Britain and Ireland is subject to the provisions of the Medical Acts, and the General Council of Medical Education and Registration of the United Kingdom (*i.e.*, the General Medical Council) is entrusted with the regulation of the qualifications of practitioners in medicine and surgery. Without discussing the law's commissions and omissions, we may state that in order to become a doctor it is necessary under the Council's regulations, after passing an approved Preliminary examination when sixteen years of age or more, to study in a medical school for a period of at least four years and nine months, passing approved professional examinations, before it is possible to get a medical degree or diploma. In practice, the average period of study taken by medical students is about six years. No one can be registered as a medical practitioner before he or she is twenty-one years of age. Registration is not legally essential to practice, but without registration no one can recover fees for professional services or hold public appointments.

PRELIMINARY SUBJECTS.

Reference has already been made in the introductory remarks to the medical Preliminary examination. Those who intend to become medical or dental students should obtain a copy of the "Regulations for Registration" as such, which is published by Messrs. Spottiswoode & Co., Ltd., 5 New Street Square, London, E.C., at 6*d.* This gives a list of the examining bodies whose Preliminary examinations are recognised by the Council. They comprise University examinations held in the United Kingdom, Government examinations, examinations by chartered bodies and examinations held out of the United Kingdom, all of which are recognised by the Council. The following are the prescribed subjects of the examination:

English.—Grammar; paraphrasing; composition; questions on English history and geography.

Latin.—Grammar; translation into English from unprescribed Latin books; translation into Latin of a continuous English passage, and of short idiomatic English sentences. (In the case of natives of India or other Oriental countries, whose vernacular is other than English, an examination in a classical Oriental language may be accepted as equivalent to an examination in Latin.)

Mathematics.—Arithmetic; algebra, including easy quadratic equations; geometry, including the subject-matter of Euclid, Books i., ii., iii., and simple deductions.

One of the following subjects: (a) *Greek* (grammar; translation into English from unprescribed Greek books; translation into Greek of short idiomatic English sentences); or (b) *a modern language* (grammar; translation into English from unprescribed books; translation of a continuous English passage, and of short idiomatic English sentences).

Approved examinations must include these subjects. When the student has obtained the necessary certificate and commenced his medical studies, he obtains from either of the following (according to whether he is studying in England, Ireland, or Scotland) a form for registration:

The Acting-Registrar of the General Medical Council, Medical Council Office, 299 Oxford Street, London, W.

The Registrar of the Branch Council for Scotland, 54 George Square, Edinburgh.

The Registrar of the Branch Council for Ireland, 35 Dawson Street, Dublin.

Medical and Surgical Diplomas.

After the certificate forms are filled up and placed with the Acting-Registrar, or branch Registrar, the student proceeds with his professional studies. It is required that in every course the following subjects must be contained:

(i) Physics, including the elementary mechanics of solids and fluids, and the rudiments of heat, light, and electricity; (ii) chemistry, including the principles of the science, and the details which bear on the study of medicine; (iii) elementary biology; (iv) anatomy; (v) physiology; (vi) materia medica and pharmacy; (vii) pathology; (viii) therapeutics; (ix) medicine, including medical anatomy and clinical medicine; (x) surgery, including surgical anatomy and clinical surgery; (xi) midwifery, including diseases peculiar to women and to new-born children; (xii) theory and practice of vaccination; (xiii) forensic medicine; (xiv) hygiene; (xv) mental disease.

It should be clearly understood that the bodies which grant degrees and diplomas in medicine and surgery modify their courses of study as it pleases them, but all endeavour to include and none of them exclude any of the above subjects from their curriculum. There is a choice of twenty-two diplomas or degrees in medicine and surgery for students, and they must make up their minds before starting what they are to work for. Substantially the educational and examination conditions are approximately the same for all, but Universities which grant degrees have certain rules which are strictly adhered to, and which limit the freedom of students to some extent. We give particulars of the conditions imposed by each examining body:

ROYAL COLLEGES IN ENGLAND.

The Royal College of Physicians of London and the Royal College of Surgeons of England jointly grant a diploma in medicine, surgery, and midwifery. The examinations are conducted by a Joint Board of the Colleges at the Examination Hall, Victoria Embankment, London, W.C., where forms of the required certificates may be obtained from the Secretary. The regulations are peculiar in permitting six months' instruction in chemistry, physics and biology, and practical pharmacy taken before passing the required Preliminary examination to count as part of the professional curriculum, thus making it possible for persons who have received their preliminary education at certain approved schools (a list of which may be obtained from the Secretary, Mr. Frederic G. Hallett) to devote the time to the strictly medical subjects. This is an important condition, but the General Medical Council and the Royal Colleges are in dispute regarding it, the Council insisting that professional studies before passing the Preliminary examination should not count. The Colleges have so far snapped their fingers at the Council. There are three Professional examinations.

The first is in chemistry, physics, elementary biology, and practical pharmacy, and the examination may be taken immediately after passing the Preliminary examination, practical pharmacy being then postponed until the later examination. The fee for the first examination is 10*l.* 10*s.*, and the subjects may be taken in three parts. The second Professional examination is in anatomy and physiology, and before being admitted to it candidates have to produce evidence of having spent twelve months in dissecting the whole of the human body and attended courses of lectures in anatomy, physiology, and practical instruction in physiology and histology. Both the subjects of the examination must be passed at one time, and the fee is 10*l.* 10*s.* The third, or Final, examination is in three parts, as follows:

Part I.—Medicine, including medical anatomy, pathology, practical pharmacy (if not taken before), therapeutics, forensic medicine, and public health.

Part II.—Surgery, including pathology, surgical anatomy, and the use of surgical appliances.

Part III.—Midwifery and diseases peculiar to women.

Candidates are not admitted to this examination until two years after passing the second. The conditions as to courses of lectures are lengthy and strict, and will be found in the official regulations. The Final examination, however, cannot be completed before the expiration of five years (five Winter and five Summer Sessions) from the date of passing the Preliminary examination. Although, therefore, the regulations enable students who have studied chemistry, physics, and biology at school to pass in these subjects immediately after passing the Preliminary examination, the medical curriculum is not really shortened, seeing that it extends to five Winter and five Summer Sessions, as required by the General Medical Council. The fee for the Final examination is 21*l.* In this and all other cases there are smaller fees for re-examination. The diploma entitles holders to use the letters "L.R.C.P., M.R.C.S." Each of the Royal Colleges grants its diploma separately, and young practitioners who have University degrees frequently take one or other diploma, according to whether they are to practise as physicians or surgeons. This applies especially in London.

ROYAL COLLEGES IN SCOTLAND.

The Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons, Glasgow, jointly grant a diploma for registration as physicians and surgeons. The conditions differ from those of the London colleges, in so far as professional studies before registration as a medical student are not recognised. Full particulars in regard to the curriculum and examinations may be obtained on application to either Mr. James Robertson, solicitor, 54 George Square, Edinburgh, or Mr. Alexander Duncan, B.A., LL.D., 242 St. Vincent Street, Glasgow. There are four Professional examinations. The first is in physics, chemistry, and elementary biology, and may be taken after these subjects have been studied during one Winter and one Summer Session—fee 5*l.* The second examination, to be taken at the end of the second year of medical study, is in anatomy and physiology, including histology—fee 5*l.* The third examination, to be taken at the end of the third year, is in pathology and materia medica with pharmacy—fee 5*l.* The Final examination is in (1) medicine, including therapeutics, medical anatomy, and clinical medicine; (2) surgery, including surgical anatomy, clinical surgery, and diseases and injuries of the eye; (3) midwifery and diseases of women and of new-born children, and (4) medical jurisprudence and public health. Medical jurisprudence and public health may be taken at any time after passing the third examination. Medicine, surgery, and midwifery must be taken together, and not earlier than on the conclusion of five winters and five summers of medical study, provided that a period of twenty-four months has elapsed since passing the second Professional examination. Fee 15*l.* The diploma granted is usually called the "triple qual." distinguishing it from the "double qual." and the letters used are L.R.C.P.E., L.R.C.S.E., L.F.P.S.G.

ROYAL COLLEGES IN IRELAND.

The Conjoint Board in Ireland of the Royal Colleges of Physicians and Surgeons there grant a registrable diploma, the examinations being held in Dublin. Full particulars can be obtained from Mr. Alfred Miller, Royal College of Physicians, Kildare Street, Dublin. There are four Professional examinations. The first (fee 15*l.*) comprises chemistry and physics and biology. They may be taken separately or together at the end of the first Winter Session of medical study. The second examination is in anatomy and physiology and histology, which may be taken together or separately at the end of the second Winter Session. The third Professional examination, at the end of the third year, is

in pathology, materia medica, pharmacy and therapeutics, and forensic medicine and public health. These also may be taken together or separately. The Final examination is in (a) medicine, including fevers, mental diseases, and diseases of children; (b) surgery, including operative surgery and ophthalmic surgery; (c) midwifery and gynaecology, vaccination, and diseases of new-born children. None of these divisions can be entered for before the end of the fourth year of the curriculum, and the examination cannot be completed before the end of the fifth year. The examination-fees amount to 42*l.* The constituent Colleges also grant separate diplomas of L.R.C.P.I. and L.R.C.S.I.

SOCIETY OF APOTHECARIES OF LONDON.

This Society grants a licence in medicine and surgery, the Professional examinations being similar to those of the Royal Colleges of London, but they are differently arranged. Thus the subjects are divided into Primary and Final examinations. Part I. of the Primary comprises elementary biology, chemistry and materia medica, and pharmacy; and Part II. consists of anatomy, physiology, and histology. Candidates may enter for Part II. before passing Part I., provided the course of study has been completed. The Final examination is in two sections. Section I. is in three parts: (1) A written examination in the principles and practice of surgery (which may be taken by itself); (2) the principles and practice of medicine and pathology and morbid histology (which may be taken at one examination), and forensic medicine (which may be taken at another); (3) includes midwifery, gynaecology, and the diseases of new-born children. This first section may be taken at any time after forty-five months of medical studies from the date of registration as a medical student. Section II. cannot be passed before the end of the fifth year. It consists of: Part I., clinical surgery, and Part II., clinical medicine and medical anatomy, which may be taken together or separately. Full particulars will be found in the official regulations and synopses, to be obtained from Mr. Frank Haydon, L.R.C.P., Society of Apothecaries, Water Lane, Blackfriars, London, E.C. The fees for the examinations amount to 21*l.*

APOTHECARIES' HALL, DUBLIN.

The licentiatehip of this body is granted after passing four Professional examinations on the subjects of medical curriculum, taken at the times prescribed by the General Medical Council. Total fees, 22*l.* 1*s.* For full particulars see the syllabus, to be obtained from the Registrar, Apothecaries' Hall, 40 Mary Street, Dublin.

Diplomas (distinct from degrees) are also granted by a few of the English Universities.

Degrees in Medicine and Surgery.

It is customary for students who matriculate at a university to proceed to the courses of study for the degrees of Bachelor of Medicine and Master of Surgery, which together entitle one to be registered as a general medical practitioner. Degrees are, of course, more highly valued than diplomas, for one reason, because a degree is a diploma *plus* a university education, the latter always being an asset of value.

UNIVERSITY OF LONDON.

This University admits to its degrees medical students who have passed its Matriculation examination (see p. 280) and have studied the curriculum subject during prescribed periods, amounting to five and a half years at approved schools. The first thing a student should do is to get a copy of the Regulations for Matriculation (3*d.*) from the University of London, South Kensington, S.W. In this pamphlet is given a short list of certificates accepted in lieu of the Matriculation examination. There are two classes of medical students—(1) internal and (2) external—but the Professional examinations for both are the same—viz.:

First, in inorganic chemistry, physics, and general biology (to be passed not less than nine months after matriculation).

Second, Part I., organic and applied chemistry (to be passed not less than six months after the First. Internal students who have passed the B.Sc. honours examination in chemistry as internal students are exempted from the course of study for this and from the examination. External students with B.Sc. honours in chemistry are exempt from the examination, but not from the course). Part II., anatomy, physiology, and pharmacology, including pharmacy and materia medica (to be passed after passing Part I. and not less than eighteen months after the First).

Third, in medicine, surgery, midwifery and diseases of women, pathology, forensic medicine, and hygiene (to be passed after the Second and not less than three years after passing in anatomy and physiology, Part II.).

Internal students are those who pursue a course of study approved by the University either (a) under the direct control of the University or a committee appointed thereby, or in any one or more schools of the University; or (b) under one or more

of the appointed or recognised teachers of the University. Students living in London should note this at the outset, as it is a decided advantage to them to be internal students, the reports of the work done by them during the curriculum counting to some extent when the examination results are considered. For external students there is liberal provision as to places of study, as to which see the Regulations (3*l.*) obtainable from the University. The fees for the Professional examinations amount to 25*l.* Those who graduate may subsequently proceed two years later to the degrees of Doctor of Medicine or Master of Surgery. In medicine there are six branches, and in surgery two. One branch only has to be taken. For M.S. dental surgery is one of the branches.

UNIVERSITY OF CAMBRIDGE.

The degrees of this University are valued by many London students, the conditions favouring the curriculum being taken in London and Cambridge. Those who have not taken the B.A. degree must pass the previous examination or other examination accepted by the University, and conform to the General Medical Council's professional curriculum at Cambridge and/or elsewhere. Residence at the University for nine terms (three years) at least is required. There are three Professional examinations, and every candidate for the degree of Bachelor of Medicine is required to compose a thesis on some subject approved by the Regius Professor of Physic, and keep an Act, which means that on a day appointed—

"The candidate shall read his thesis or such portion thereof as the Regius Professor or his deputy shall direct; the Regius Professor or his deputy shall then bring forward arguments or objections for the candidate to answer, and shall examine him orally as well on questions connected with his thesis as on other subjects connected with medicine of a more general nature; the whole exercise being made to continue at least half an hour."

UNIVERSITY OF OXFORD.

At this University all candidates for medical degrees first graduate as B.A. in the Natural Science School, so that the curricula implies residence in Oxford for seven years. For full particulars apply to Sir William Osler, M.P., Regius Professor of Medicine, University Museum, Oxford.

UNIVERSITY OF DURHAM.

Candidates for the medical degrees must pass the University Matriculation examination or an approved equivalent. For the degree of M.B., at least one of the five years of professional education must be spent at the College of Medicine, Newcastle-on-Tyne. It is possible by this provision to study in London or other place. There are four Professional examinations; fees, 25*l.* Address, for the Matriculation examination, The Registrar, University, Durham; and, for the medical studies, The Secretary, The College of Medicine, Newcastle-on-Tyne.

OTHER ENGLISH PROVINCIAL UNIVERSITIES.

The *Universities of Leeds, Liverpool, and Manchester* were affiliated at one time, and since their separation continue to act jointly as regards a Matriculation examination (held in July and September; fee, 2*l.*). This is in five subjects, but if a medical student happens not to have included *both Latin and either Greek or a modern language*, he will be deemed to have passed the Matriculation examination (Faculty of Medicine), provided he satisfies the examiners in the subject omitted. Five years' curriculum is necessary, and of these two years must be spent in the University. The Professional examinations to be passed are three (Leeds and Liverpool) or four (Manchester) in number, on the lines of the Royal Colleges and London University. The examination-fees amount to 15*l.* Communications concerning classes, etc., should be addressed to The Dean of the Medical Faculty, The University, Manchester (or Leeds or Liverpool). Those relating to the examinations, degrees, etc., should be addressed to The Registrar, The University, Manchester (or Leeds or Liverpool).

The *University of Birmingham*, the *University of Bristol*, and the *University of Sheffield* are also empowered to grant medical degrees. Their conditions are substantially the same as at the three Universities just named. For particulars apply to the Dean of the Faculty of Medicine in each case.

UNIVERSITIES IN SCOTLAND.

The *Universities of Aberdeen, Edinburgh, Glasgow, and St. Andrews* grant the degree of Bachelor of Medicine and Surgery, M.B.Ch.B., in the same conditions in all cases. For the assistance of all children of Scotch parents and others resident in Scotland, Mr. Andrew Carnegie some years ago instituted a fund from which such persons who matriculate at one or other of the Universities in Scotland may obtain grants to aid their education at the University. It is important, therefore, that those who propose to study medicine and surgery in Scotland and who may require assistance from the Carnegie Fund should conform to the conditions of that fund, one of which is passing the Preliminary

examination of the University. This examination is conducted by a Board conjointly representing all the Universities, and is in (1) English, (2) Latin, (3) mathematics, and (4) an additional language—namely, Greek, French, German, Italian, or another language approved by the Senatus. A degree in Arts or in Science of any University of the United Kingdom or of recognised Indian, Colonial or foreign Universities exempts from the Preliminary examination, and certain other certificates are also recognised, such as the leaving certificates of the Scottish Education Board. The examination may be regarded by students in Scotland as holding the same place as the Matriculation examination of the London University holds with English students. The curriculum for the degree extends to five years or fifteen terms, and not less than two years, or six terms of medical study must be spent in attendance at the University chosen at courses of instruction in the subjects of the curriculum. This means that if a student intends to go forward to the degree of the Edinburgh University, he must spend at least two years there, and the other three years of the curriculum may be spent in any other approved medical school in the United Kingdom, but the Edinburgh University Professional examinations must be passed.

UNIVERSITIES IN IRELAND.

The *University of Dublin*, Trinity College, grants degrees in medicine and surgery on conditions similar to those of Oxford University.

The *National University of Ireland* includes a Faculty of Medicine, which grants the degrees of Bachelor of Medicine and Bachelor of Surgery to those who matriculate at the University by passing its Matriculation examination, or in lieu of it a Preliminary examination of the Royal College of Physicians and Surgeons of Ireland, or the medical and senior grade examinations held by the Board of Intermediate Education in the General Medical Council's subjects. Students must take part of the medical curriculum at one or other of the constituent Colleges—namely, the University Colleges of Cork, Dublin and Galway, and St. Patrick's College, Maynooth—but part of the curriculum may be taken elsewhere on the usual conditions. For full information inquirers should communicate with the Secretaries of the constituent Colleges.

The *Queen's University of Belfast* has similar arrangements to the foregoing. Candidates must matriculate at the University after passing a Preliminary examination and study for at least three out of five years at the University and pass four Professional examinations. The fees amount to 16*l.* 16*s.* Apply for further information to the Dean of the Faculty of Medicine at the University.

Medical Appointments.

NAVY.—Registered medical practitioners who are British subjects and of pure European descent and not over twenty-eight years of age are eligible for commissions in the Medical Department of the Royal Navy. Applicants are examined in medicine and surgery, and on passing and receiving an appointment are paid at the rate of 255*l.* 10*s.* a year to commence, which may rise to 1,300*l.* a year on becoming Inspector-General, certain extras also being paid, of which full particulars, with details in regard to the examination, pension, etc., are given in the regulations, copies of which may be obtained from the Director-General, Medical Department, Admiralty, London, S.W.

ARMY.—Commissions in the Royal Army Medical Corps are given to registered medical practitioners between twenty-one and twenty-eight years of age who pass an examination in medicine and surgery conducted on behalf of the War Office. Payment begins with an appointment as lieutenant at 14*s.* per day, exclusive of allowances, and rising to 2,000*l.* a year, which is paid to the Director-General. A pamphlet entitled "Regulations for Admission to the Royal Army Medical Corps" gives full particulars of the conditions, and can be obtained from Messrs. Wyman & Sons, Ltd., Fetter Lane, London, E.C.

INDIA.—Commissions of medical officers in the Indian Medical Service are granted on examination to registered medical practitioners between twenty-one and twenty-eight years of age, the pay to lieutenants being from 420 to 500 rupees per month, exclusive of certain extras, with a retiring allowance of from 300*l.* at the end of seventeen years' service to 700*l.* at the end of thirty years' service. The Indian Medical Service has peculiar attractions to those who have pharmaceutical as well as medical training. Forms of application and full printed particulars may be obtained from the Military Secretary, India Office, London, S.W.

Medical Instruction.

ABERDEEN.—The *University Faculty of Medicine* at Marischal College affords complete instruction, clinical practice being obtained in the Royal Infirmary (230 beds) and other special institutions; fees (including class, hospital, and all

examination fees for five years' curriculum, and fees for degrees), about 150*l*. Dean, Professor J. T. Cash, M.D. The prospectus can be obtained from the Secretary, Mr. Donaldson R. Thom, M.A., Marischal College, Aberdeen.

ABERYSTWYTH.—*University College of Wales*, a constituent of the University of Wales, which grants degrees in medicine and surgery. The Registrar is Mr. J. Mortimer Green.

BANGOR.—*University College of North Wales*, another constituent college of the University of Wales. For particulars of preliminary medical instruction address the Dean.

BELFAST.—*Queen's University of Belfast*.—The fees in the Faculty of Medicine (including clinical instruction) are about 95*l*. Dean of the Faculty, Professor Milroy. Mr. J. M. Finnegan, the Secretary, supplies a pamphlet giving information as to the courses and fees.

BIRMINGHAM.—*University Faculty of Medicine*.—The curriculum is specially arranged for the degrees of the University, but students may qualify also for the degrees of other Universities and for the diplomas of licensing bodies. Clinical instruction is obtained at the General and Queen's Hospitals [together over 500 beds]. The composition-fees, covering the whole cost of the M.B. and Ch.B. degrees, amount to 154*l*. 19*s*. 6*d*. Dean, Professor Gilbert Barling, M.Sc., F.R.C.S.

BRADFORD.—*Technical College*.—Instruction is provided in Preliminary Scientific subjects.

BRIGHTON.—*Technical Day College*, for Preliminary Scientific subjects.

BRISTOL.—*The University Faculty of Medicine*.—The entire course of study required for the medical and surgical degrees of the University of London, the Conjoint Board, and the Society of Apothecaries is obtainable, with clinical practice, at the Royal Infirmary and General Hospital [together 470 beds]. Composition-fee for complete curriculum (including hospital practice), 139*l*. 13*s*. For full particulars write to The Dean of the Medical Faculty, Professor E. Fawcett, M.D.

Merchant Venturers' Technical College, for Preliminary Scientific subjects.

CAMBRIDGE.—*University Medical School*.—The regulations, schedules, and lists of lectures may be obtained from the Registrar of the University, Cambridge. Clinical practice is obtained at Addenbrooke's Hospital [172 beds]. Inclusive expenses for an economical student, about 100*l*. per academical year.

Girton College, Nornham College.—Are recognised for Preliminary Scientific subjects.

CAPE TOWN.—*South African College*.—Is recognised for Preliminary Scientific subjects.

CARDIFF.—*University College of South Wales and Monmouthshire*, a constituent college of the University of Wales. The first three years of the medical curriculum can be taken at Cardiff. Fees for the Preliminary Scientific and the Intermediate examination of the University of London, 57*l*. 10*s*.; for the Conjoint Board (First and Second examinations), 41*l*. 10*s*. Hospital practice is obtained at Cardiff Infirmary. Dean of the Faculty of Medicine, Dr. D. Hepburn. Registrar, Mr. J. Austin Jenkins, B.A., University College, Cardiff.

CHELtenham.—*Ladies' University College*, for Preliminary Scientific subjects.

CORK.—*University College*, a constituent college of the National University of Ireland. In the Faculty of Medicine the fees for the college lectures and hospital attendance required amount to about 100*l*., exclusive of examination-fees. Clinical practice is obtained at North and South Infirmaries [100 beds each], District Hospital [1,200 beds], and other local hospitals. Particulars from the Dean of the Medical Faculty, Professor A. E. Moore, M.B., B.Ch.

DERBY.—*Technical College*.—The subjects for the Preliminary Scientific examination can be taken here.

DUBLIN.—*Trinity College* (School of Physic).—Students must have matriculated before they can be admitted to the School of Physic or attend dissections; fees, 149*l*. 17*s*. Address, Professor H. W. Mackintosh, M.A., Registrar of the School of Physic, Dublin.

Royal College of Surgeons' Schools of Surgery (which includes the Carmichael and Ledwich Schools).—The Schools of Surgery are attached by charter to the Royal College of Surgeons, being under the supervision and control of the Council. Total expense of triple qualification (including examination-fees), 160*l*. 13*s*. The Registrar, Mr. G. F. Blake, St. Stephen's Green, supplies a students' guide on application.

University College (constituent college of the National University).—Registrar, Dr. A. W. Conway, M.A., Earlsfort Terrace, Dublin.

DUNDEE.—*University College*.—The whole of the medical curriculum in connection with the University of St. Andrews (*q.v.*) can be taken at this college. Clinical instruction is given at the Dundee Royal Infirmary [400 beds].

DURHAM.—*See Newcastle-on-Tyne.*

EDINBURGH.—*University Faculty of Medicine*.—The minimum class and hospital fees for the complete curriculum for

the M.B. and Ch.B. degrees amount to 115*l*., and examinations (including Matriculation) cost another 28*l*. 7*s*. Hospital practice is obtainable at the Royal Infirmary, etc., 1,840 beds being available for clinical instruction. The syllabus can be had from the Dean (Professor H. Littlejohn, M.A., B.Sc.) or the Clerk to the Senatus.

School of Medicine of the Royal Colleges.—The courses of instruction required by the Edinburgh University and other Universities, also the Royal Colleges of Physicians and Surgeons of Edinburgh, London, and Dublin, are obtainable here, with special classes for women students. The minimum cost of the triple qualification, including examination-fees, is 115*l*. Communications respecting the School should be addressed to Major D. G. Marshall, I.M.S., Dean of the School, 11 Bristo Place.

School of Medicine for Women, Surgeons' Hall.—Provides all classes required for a complete curriculum. Dean, Dr. W. Russell.

EXETER.—*Royal Albert Memorial College*, for classes in subjects of the first Professional Medical and Dental examinations.

GALWAY.—*University College*.—A constituent of the National University of Ireland. The fees in the Faculty of Medicine are the same as at Cork. Clinical teaching is obtained at the Galway Hospital. For particulars address the Registrar, Dr. J. P. Pye, M.D.

GLASGOW.—*The University Faculty of Medicine and Queen Margaret College*, Hamilton Drive, Glasgow (School of Medicine for Women). Fees for M.B. and Ch.B., including Matriculation class fees, hospital attendance, and Professional examinations, about 140*l*. Clinical instruction is given at the Western Infirmary [595 beds] and Glasgow Royal Infirmary [588 beds]. Dean of the Faculty, Professor Muir, M.A. Syllabus of the regulations, etc., may be obtained from Mr. W. Innes Addison, Assistant Clerk of Senate, The University. For information regarding the women's school address Miss Melville, Mistress of Queen Margaret College.

St. Mungo's College.—Medical School of Glasgow Royal Infirmary. The College buildings are situated within the grounds of the Royal Infirmary [620 beds], where clinical instruction is obtained. Fee for English and Scottish Conjoint qualifications, about 70*l*. The Carnegie Trust pays part of the fees on certain conditions. The Dean, T. K. Munro, will supply a detailed syllabus.

Western Medical School, 44 and 46 University Avenue, Hillhead. Lectures and demonstrations are given in chemistry, anatomy, surgery, medicine, midwifery and gynaecology, and ophthalmology. Some of the classes qualify for graduation and for Scotch diplomas. Secretary, Mr. J. N. Morton, M.A.

Anderson's College Medical School, Dumbarton Road. Clinical instruction is given at the Western Infirmary immediately adjoining the College, and also at the Royal Infirmary. The classes qualify for all the licensing bodies in the United Kingdom and the Universities (under certain conditions). The courses in Public Health are recognised by the Scottish Colleges, the Irish Colleges, and English Universities. The Carnegie Trust pays the fees of students under certain conditions (apply to W. S. McCormick, Carnegie Trust Offices, Edinburgh). Calendar containing full details of fees on application from Professor B. G. Cormack, Hon. Secretary, Medical Faculty.

HALIFAX.—*Municipal Technical School* (Day Classes), for Preliminary Medical studies.

Huddersfield.—*Technical College* (Day Classes), for Preliminary Medical studies.

HELL.—*Municipal Technical College* (Day Classes), for Preliminary Medical studies.

LEEDS.—At the University the approximate cost of education in the Faculty of Medicine is 195*l*. 6*s*. (this includes composition-fee for classes 73*l*. 2*s*. 6*d*., examination-fees, books, and microscope). Clinical work is obtained at the Leeds General Infirmary [524 beds]. For further particulars address the Registrar or the Dean of the Medical Faculty.

LEICESTER.—*Municipal Technical and Art School* (Day Classes), for Preliminary Medical course.

LIVERPOOL.—*The University Faculty of Medicine* provides full courses for the entire medical curriculum. The clinical instruction is obtained at the Royal Infirmary and other local hospitals [together 1,127 beds]. The composition-fees for the M.B. and Ch.B. amount to 84*l*. 15*s*. for University students, with examination-fees an extra 15*l*. The hospital fee is 42*l*. Dean, Mr. K. W. Monsarratt, M.B., C.M., F.R.C.S. (Edin.).

LONDON.—The following medical schools and colleges are constituents of the University of London, where the whole or part of the instruction required for the medical degrees can be obtained:

Charing Cross Hospital Medical College, Chandos Street, W.C. [200 beds].—The approximate cost of medical education at this school for the Conjoint diploma is given in the prospectus as 199*l*. 5*s*., this including composition-fee (120*l*. 15*s*.),

examination-fees (42/), books, and instruments fee. Various complete medical courses can be taken here. Clinical instruction only costs 77l. 14s. The dean is Mr. F. C. Wallis, F.R.C.S., from whom further information can be obtained.

Guys' Hospital, London Bridge, S.E. [620 beds].—Fees, about 160l. There is a residential college in connection with the medical school. Dean, Dr. H. L. Eason.

King's College Hospital Medical School, Lincoln's Inn, W.C.—Preliminary and intermediate portions are taken at King's College, but composition-fee can be arranged (147l. for University course or for Conjoint course). Fees for the course for the Final examinations, either for the M.B., B.S., of the University of London, or for the diplomas of the R.C.P. and R.C.S., 73l. 15s. Dean, Mr. H. Willoughby Lyle, M.D., F.R.C.S.

King's College Faculty of Science (Medical Division), Strand, W.C.—Fees for the University of London courses: First examination for medical degrees 26l. 5s., second examination 57l. 15s. The Conjoint Board course fees are: First examination 21l., second examination 57l. 15s. Dean, Professor W. D. Halliburton, M.D., F.R.S.

London Hospital Medical College, Turner Street, Mile End, E. [922 beds].—Fees, 31l. 10s. per annum with entrance fee; reduction to sons of medical men. Its position renders it one of the largest accident hospitals in the world. Dean, Mr. W. Wright, F.R.C.S., D.Sc.

London (Royal Free Hospital) School of Medicine for Women, 8 Hunter Street, Brunswick Square, W.C.—Composition-fees for University of London degrees and Conjoint Board qualification 160l., other courses 140l. The prospectus of the school gives details of fees for all courses for medical qualifications open to women. Clinical instruction at the Royal Free Hospital [165 beds]. Dean, Miss J. A. H. Cock, M.D.

Middlesex Hospital, Cleveland Street, W. [355 beds].—Composition-fees: for general students 141l. 15s., for University of London students 152l. 5s. Dean, Mr. H. Campbell Thomson, M.D., F.R.C.P.

St. Bartholomew's Hospital and College, West Smithfield, E.C. [744 beds].—Fees, by a single payment, 173l. 5s., or 47l. 5s. annually for four years. The complete course (preliminary, scientific, intermediate, and hospital practice) can be taken at this College. The total value of scholarships and prizes awarded annually is about 900l., of which several are entrance scholarships in science and general education. Dean, Dr. T. W. Shore, B.Sc.

St. George's Hospital, Hyde Park Corner, S.W. [440 beds], with a convalescent branch at Wimbledon.—This is now a purely clinical school; students entering for the full course carry out their preliminary studies through London University at either King's College or University College; annual composition-fee 31l. 10s., entrance-fee for other students 10l. 10s. There are several entrance scholarships at this hospital. Dean, Dr. E. I. Spriggs.

St. Mary's Hospital, Cambridge Place, Paddington, W. [301 beds].—Fees for full curriculum for Conjoint Board 140l., or for University degrees 145l. (5l. more if paid in instalments). Entrance scholarship examinations will be held on September 25 to 27. The winter session commences on October 2, when Lord Justice Fletcher Moulton will present the prizes and awards. Dean, Sir John Broadbent, Bart., M.D., F.R.C.P.

St. Thomas's Hospital, Albert Embankment, S.E. [603 beds].—Fees for Preliminary subjects, 15l. 15s. per annum; second-year students, entrance 21l., annual fee for all classes 31l. 10s.; fourth-year students (after second M.B.), entrance 10l. 10s.; annual fee 31l. 10s. Dean, Dr. E. Stainer, M.A., M.D., M.Ch. Oxon. Secretary, Mr. G. Q. Roberts, M.A.

University College, Faculty of Medical Sciences, Gower Street, W.C.—Courses of instruction are given for the medical degrees as well as the University of London, examinations of the Examining Board of the R.C.P. and R.C.S. and other licensing bodies. Fees: University of London, First medical examination course 27l. 6s., second examination course 60l. 18s. Conjoint Board and Society of Apothecaries courses, 5l. 5s. for the first course. Clinical instruction is taken at a medical school and hospital (see University College Hospital Medical School). Secretary, Mr. Walter W. Seton.

University College Hospital Medical School, University Street, Gower Street, London, W.C. [305 beds].—Fees: Final M.B. course, or Conjoint Board, 84l. Dean, Mr. Raymond Johnson, B.S., F.R.C.S. Secretary, Mr. L. R. Thomas.

Westminster Hospital Medical School, Broad Sanctuary and Caxton Street, S.W. [215 beds].—Fees: Annual composition-fee, twenty-five guineas; entrance-fee, fifteen guineas, of which ten guineas is returned upon qualification and fulfilment of conditions. Dean of the School, Mr. R. E. Rock Carling, F.R.C.S. Information can also be had from Mr. W. Fryer, the Secretary of the Medical School.

Instruction in either or both Preliminary and Intermediate courses of medical study is also given at the *Bedford College*,

York Place, Baker Street, London, W.; *Royal Holloway College*, Englefield Green, Surrey; *Royal College of Science*, South Kensington, S.W.; *Birkbeck Institute*; *East London Technical College*; *Central Technical College*; *Westfield College*; *South-Western Polytechnic Institute*, and *Battersea Polytechnic* (Day Classes). There are also several special post-graduate colleges in London.

MANCHESTER.—*University Faculty of Medicine*.—Clinical practice is obtained at the new Royal Infirmary [592 beds]. Fees for M.B., about 140l. Dean, Professor W. Stirling, M.D.

NEWCASTLE-ON-TYNE.—*University of Durham College of Medicine*.—Clinical instruction is given at the Royal Victoria Infirmary [400 beds]. Fees: 75l. 12s. (payable to the Secretary) and hospital-fees 36l. 15s. (payable to Dr. W. E. Hume). The Secretary is Professor R. Howden.

NOTTINGHAM.—*University College*, for Preliminary Scientific studies.

OXFORD.—The *University* medical curriculum generally extends over seven years, but it can be shortened to six years if the student is able to pass the Preliminary Chemistry and Physics examinations at the end of his first term. The instruction in natural science is carried on for the most part at the Museum. The clinical work is taken at a metropolitan or provincial medical school. Intending students should consult "The Examination Statutes" (Clarendon Press) or interview Dr. W. Osler, the Regius Professor of Medicine at the University Museum.

PLYMOUTH.—*Municipal School of Science* (Advanced Day Classes), for Preliminary Scientific course.

PRESTON.—*Harris Institute*, for Preliminary Scientific course.

READING.—*The College*, for Preliminary Scientific course.

ST. ANDREWS.—*The University Faculty of Medicine*.—The whole curriculum may be taken in University College, Dundee, or the first two years in the United College, St. Andrews, and the remaining three years at the University College, Dundee. The fees for the complete course, exclusive of examination-fees, amount to about 140l. The clinical practice is obtained at the Dundee Infirmary [400 beds]. Dean, Professor Kynoch. Secretary and Registrar, Mr. Andrew Bennett.

SHEFFIELD.—*University Faculty of Medicine*.—Composition-fee, 30l.; hospital practice (Royal Infirmary and Royal Hospital, 427 beds), 42l. Registrar, W. M. Gibbons. Dean, Professor J. M. Beattie, M.D.

SOUTHAMPTON.—*Hartley College*, for Preliminary Scientific course. A special prospectus is issued for medical and dental students.

SWANSEA.—*Technical College* (Day Classes), for Preliminary Scientific course.

AN EXPERIENCE OF THE MEDICAL CURRICULUM.

A pharmacist who has recently completed his medical course at Edinburgh and taken his degree gives his experience of the curriculum and examinations for the benefit of those in the ranks of pharmacy with similar aspirations.

There may be some in pharmacy who have a desire to proceed to the wider sphere of medicine, and I trust that my experience may be of some assistance to them in coming to a definite decision.

It may be asked why I did not rest content with the Major qualification, and to explain the origin of my medical aspirations it is necessary to go back somewhat. When I was a boy at school I wished to be a doctor, but the financial question debarred me from any chance of carrying out my wish. When about to leave school I was given the choice of being either a chemist or a lawyer, and chose the former. After the age of sixteen I have been entirely dependent on my own resources. After passing the Minor I commenced working for the Major, and while doing so the Carnegie scheme for the payment of class fees of Scottish students in the Universities of Scotland was brought into force, and this awakened the burning desire for a University education which had lain latent for years. The financial difficulty was, however, too serious, so I set to work to pass the Major, intending to go on for B.Sc. and F.I.C., believing that with these qualifications I could make sufficient to pay my way and study at the same time. I commenced studying for the University Preliminary examination with that intention, and then after further consideration I decided to go in for medicine.

Now, in regard to the Carnegie Trust, I must warn students that the Trust does not pay all the fees that the student must pay. It does not pay any examination, maternity, dispensary, matriculation, or laboratory fees, nor the hospital ticket (12l. 12s.), and there are some other classes which the student may find it desirable to take out for which it does not pay. I understand the latest rule is that each medical beneficiary is to be allowed 15l. per annum, which will pay

but a small portion of the necessary fees. It may be supposed that being a chemist would be a decided advantage during the curriculum. Such did not prove to be the case to anything like the extent that I had expected. Indeed, from a class examination point of view I did better in subjects of which I had no previous knowledge. In fact, the only subject in which I did not take distinction was one in which I was fairly well versed before going to the University. I knew what was lectured on, so that I took very few notes. It was my first subject and my first experience of University class examinations. I got my D.P.—i.e., a certificate stating that the student has duly performed the work of the class. Before getting it he must have an average of 30 per cent. in his class examinations and have two-thirds of full attendance on classes. I expected to have done better, and when I asked the examiner why I had not obtained higher marks, he said that I had shown a good knowledge of the subject, but that I had not answered the questions quite as he wanted. This gave me a hint, and I recommend the student to take as full notes as possible of the lectures, and when the examination comes round to grind up these notes and add to his knowledge by reference to books.

Examinations are often greatly a matter of luck, and it is to be regretted that there is not some better method of testing a student's knowledge of a subject than by examination. As it is, the man who is able to answer the particular questions asked in the most concise manner in the given time, and is able to give back word for word what the examiner has taught, stands the best chance. One hour is allowed for the class examinations, and most students find that they could have done better if more time had been allowed. In the professional written examinations two hours are allowed, so that one has time to think. I believe the greatest strain which I have endured in life was that associated with the Final examination. The examination extended over a period of six weeks, and the suspense was very great, especially when one's energies were at a low ebb through prolonged exertion.

Since the medical course extends over a period of not less than five years, and comprises very many subjects, it is not necessary for me to go into the different subjects that are taught, as doubtless these are dealt with elsewhere in this issue. Now, in regard to the work, I must say candidly that I thought studying for the Minor was a great "cram," but it is nothing compared to the medical course. There seems such a little time in which to get the instruction needed.

The only parts of the curriculum that I was exempted from

were practical botany (which was not then compulsory) and practical materia medica, but I had to sit for the Professional examination in each. Practical materia medica is entered for apart from the systematic lectures. It is a bit of a farce for a qualified chemist to be compelled to sit for an examination in which he has to compound half a dozen pills and some powders, do some translations, recognise a number of specimens, and correct some incompatibilities, for the doing of which he had the pleasure of paying 1l. The whole chemistry and physics courses and the botany lectures have to be gone through. Materia medica includes therapeutics, so that the Minor is not sufficient for that, but I would suggest that the Pharmaceutical Society should endeavour to get Minor men exempted from the classes and examinations in botany and chemistry and the examination in practical materia medica, and that, in addition, Major men should be let off the class and examinations in physics.

My advice to anyone who has a son whom he intends entering for medicine is to make him pass the Preliminary, or its equivalent, while at school, and then send him to a chemist's for a year or two, where he will learn something of the trade. He should start at the University at the beginning of the academic year—i.e., with the winter session. One who has entered the trade should take the Minor, as this ensures him a means of livelihood in case of need. I filled up most of my holidays by acting as *locum* in different parts of the country. I was thus able, with the little that I had in hand upon starting, to go through my course independently, and it may interest some to learn that I had still six shillings to my credit after being registered. One cannot help being struck with the fact that all through the course one has to keep on paying fees.

In my various references I speak of Edinburgh University. It is a famous medical school, being closely associated with the Royal Infirmary, in which much of our work is done. A student should pay special attention to practical and clinical work. I do not remember one-tenth part of what I have read, but those things which I do know best were impressed upon me by actual practical or clinical work. I advise a student to go to the wards, etc., where he thinks he will learn the most, and what will be likely to be of most value to him after graduation, for that is much more important than distinction in a class examination.

As a last word, I would add that the medical course is a long, a strenuous, and an expensive one, and anyone who wishes to have an easy time and to make lots of money should choose some other profession.

The Practice of Dentistry.

To those who may be considering "What shall we make our sons?" the profession of dentistry may enter largely into their thoughts, and rightly so, for, comparing it with other professions, the number of those qualifying is by no means so large that the profession may be said to be overcrowded. It is not overcrowded yet, although the numbers going in for it are increasing yearly, but it should always be borne in mind that once a lad is started on a professional career, whichever profession is chosen, the ultimate ambition and goal of that lad, provided he finds the profession thus chosen is suitable to his temperament and capability, should be that he takes his full diploma. Nothing short of this will do in these days of great competition. It may be asked "What things are essential for the making of a good dentist?" The first thing to consider might be the personal aspect of the dentist. Good health is essential, a lad who is anything of a weakling should never think of starting dentistry. The working hours may not be long, but the sedentary life, the constant stooping and bending over patients, the inhaling of bad and often foul breaths, combined with the strain, for there is always a certain amount of nervous tension, all these together will sooner or later undermine the best of healths. He must be tactful with all his patients, never on any account losing his temper even in the most trying circumstances, patient in the extreme, always a gentleman, cleanly in appearance and habits. In his work he has many delicate operations to conduct, in this respect approaching the surgeon who performs some operations which may be said to be done almost by the feel of his fingers. He has to be of a mechanical turn of mind, for each patient being different he has often to devise and make some special form of denture, crown, filling, or bridge, etc., straight on the

spot, and which no text-book supplies, and perhaps which he will never make again for another patient.

Many people still have the idea that dentistry is just a case of extracting a bad tooth and afterwards putting in a plate to fill up the spaces thus made. A more mistaken idea could not exist. Nowadays every effort is made to preserve all teeth however bad they may be, extraction being only the final resort after all other means have failed. Each year some new method of operation or some preparation or instrument is being discovered, and the advance made in the last twenty or even ten years is simply marvellous. In this respect there are many more things yet, it is safe to say, awaiting some master mind to develop, and there is abundance of room for good men to be at the top of the profession.

As to the statutory requirements, the first step is necessarily the Preliminary examination, to which reference has already been made (p. 280). The General Medical Council's requirements in that respect are the same as for medicine, and it is important to register as a dental student promptly, as no part of the professional education taken before registration counts as part of the curriculum. Any chemist who proposes making his son a dentist could not do better than take him for a year or two as apprentice with himself. The insight into dispensing and the actual contact with the various drugs is a training and knowledge which in after-years will never be regretted, and which during his professional course and after qualifying will be of the utmost help to him. Some may think it is a waste of time, but it is not so. If a lad leaves school at the age of fifteen or sixteen, two years is not long, and he could even during this time be taking his classes for the Preliminary Science examination, and he cannot in

any case pass his Final Dental examination before he is twenty-one years of age.

The time taken for professional study varies, but four years is the minimum which must be expended in apprenticeship classes and hospital practice. As regards mechanical training, there is a good deal of discussion among dentists as to whether an apprenticeship or pupillage to a private dentist is not better than the training in the workshop of a dental school. The cost of professional education varies with the different schools and hospitals, but anything from 180*l.* to 250*l.* will cover all expenses for classes, examination fees, pupillage, instruments, etc.

When qualified the student should undoubtedly take a post as an assistant to a good dentist for a year or so. Too many students, immediately they have passed their Final, rush into practice for themselves, only to find that they have much to learn which can only be learnt in private practice. A good operator in all the various branches of dentistry can always command a good salary, and if he be steady, obliging, and conscientious, there are many places in which he would be taken into partnership by his chief. If he be not so fortunate as to secure a permanent berth such as this, he will find that when he does begin on his own account he will have gained much experience and also have a greater confidence in himself.

The nature of the dental curriculum is explained in the particulars of the diplomas which follow.

DEGREES AND DIPLOMAS.

Royal College of Surgeons of England.—The College grants a diploma to candidates who pass three examinations: (1) Identical with Parts I. and II. of the First examination of the Conjoint Board for medical students; (2) dealing with medical dentistry and dental metallurgy; includes practical work and (3) covering (a) general anatomy and physiology, general pathology and surgery, (b) dental anatomy and physiology, dental pathology and surgery, and practical dental surgery. It is partly written, and partly oral with practical work. Candidates must pass (a) before they proceed to (b). Before the Second examination the candidate must produce certificates of having been engaged during a period of not less than two years in acquiring a practical familiarity with the details of mechanical dentistry; of registration as a dental student; of having attended at a recognised dental hospital and school (a) a course of lectures on dental metallurgy, (b) a course of practical dental metallurgy, (c) a course of lectures on dental mechanics, (d) a course of practical dental mechanics, including the manufacture and adjustment of six dentures and six crowns. Before entering for the Third examination the candidate must be twenty-one years of age, and must produce certificates of having been engaged during four years in the acquirement of professional knowledge subsequent to the date of registration as a dental student; of having attended at a recognised dental hospital and school (a) a course of dental anatomy and physiology, (b) a separate course of dental histology, including the preparation of microscopical sections, (c) a course of dental surgery, (d) a separate course of practical dental surgery, (e) a course of not less than five lectures on the surgery of the mouth, (f) a course of dental bacteriology, (g) a course of dental materia medica, (h) a course of instruction in the administration of such anaesthetics as are in common use in dental surgery; of having attended at a recognised dental hospital, (i) in the dental department of a recognised general hospital, the practice of dental surgery during two years; of having attended at a recognised medical school (a) a course of lectures in anatomy, (b) a course of lectures on physiology, (c) a separate practical course of physiology, (d) a course of lectures on surgery, (e) a course of lectures on medicine; of having performed dissections at a recognised medical school during no less than twelve months; of having attended at a recognised hospital or hospitals the practice of surgery and clinical lectures on surgery for twelve months during the ordinary sessions. Certain degrees and licences in dental surgery are recognised by the College which admit the holders to the Second and Third examinations together without passing the Preliminary Science examination. The fee for the diploma in dental surgery is 4*l.* Complete particulars are given in the regulations compiled by the Secretary, Examination Hall, Victoria Embankment, London, E.C.

The Royal College of Surgeons, Edinburgh. requires two examinations to be taken during the dental curriculum. The first in anatomy, physiology, chemistry, and physics,

and the second in surgery, medicine, and dental therapeutics, with the special subjects of dental anatomy and physiology, dental surgery and pathology, dental mechanics, and dental metallurgy, and a practical, written, and oral examination in dental and oral surgery, pathology, and mechanics. Proof has to be furnished that the candidate has undergone not less than three years' instruction in mechanical dentistry. Examination fees, 15*l.* 15*s.* For further particulars write to Mr. D. L. Eadie, 54 George Square, Edinburgh.

Faculty of Physicians and Surgeons, Glasgow.—The examinations and fees are much the same as in Edinburgh. Dr. A. Duncan, B.A., 242 St. Vincent Street, Glasgow, will supply further details.

The Royal College of Surgeons in Ireland also requires two Professional examinations. At the first examination the subjects are: (a) Physics and chemistry, including practical chemistry and metallurgy; (b) general anatomy, physiology and histology, and dental anatomy, physiology and histology. The two groups may be taken together or separately. At the second, or Final examination, the subjects are general pathology, medicine and surgery, dental surgery and dental pathology, with the materia medica and therapeutics applicable to dental surgery, dental mechanics and metallurgy, and orthodontia. The candidate must pass in all subjects on one occasion. Fees, 21*l.* Curriculum fees total to about 80*l.* Candidates who have taken chemistry and physics in the First Professional are exempted from producing evidence of study or examination in them. The Council has power to admit to examination *sine curricula* candidates whose names are on the Dental Register. All communications should be addressed to the Registrar, Royal College of Surgeons, Stephen's Green, Dublin.

UNIVERSITY DEGREES AND DIPLOMAS.

The degrees and diplomas obtainable at the various Universities are indicated below:

Birmingham.—The degrees in dentistry are B.D.S. and M.D.S., and the diploma L.D.S. The curriculum for B.D.S. degree covers five years, and costs 146*l.* 19*s.*, but the degree is not conferred upon any candidate who has not obtained the L.D.S. Hon. Secretary, Mr. J. Humphreys, Dental Department, University, Birmingham.

Durham.—Diploma for which there are four examinations. Examination-fees 12*l.*, diploma-fee 3*l.* Address, The Secretary, Professor Howden, University of Durham College of Medicine, Newcastle-on-Tyne.

Leeds.—Degrees (B.Ch.D. and M.Ch.D.) are granted, also a diploma. The approximate cost of the degree is put down at 298*l.* 15*s.* 6*d.*, and for the diploma 272*l.* 15*s.* Address, The Dean of the Faculty of Medicine.

Liverpool.—Degrees (B.D.S. and M.D.S.) and L.D.S. diploma. Fees for L.D.S. Liverpool, 58*l.* 10*s.*; other licensing bodies, 61*l.* 10*s.* Mechanical dentistry and hospital practice costs 100*l.* Lecture-fees for B.D.S. degree 67*l.* 10*s.*, and clinical practice 126*l.* Secretary of the Board of Dental Studies, Mr. W. H. Gilmour, M.D.S.

Manchester.—Degrees B.D.S. and M.D.S., also a diploma. The curriculum for the B.D.S. covers five years. There are four examinations. Composition-fees: B.D.S., 63*l.*; for the L.D.S., University 57*l.* 15*s.* and England 63*l.* Dental Hospital fees payable, 130*l.* (for B.D.S.) or 100*l.* (for L.D.S.). Write, Dean, Medical Faculty, Dental Department, for further particulars.

Dublin.—The National University grants two degrees in dental surgery. For the B.D.S. there are four examinations, and candidates must have been apprenticed to a registered dentist for a period of not less than two years. Trinity College (University of Dublin) grants the M.Dent.Sc. degree.

DENTAL INSTITUTIONS.

The following are the dental colleges and hospitals where the whole or part of the professional instruction, as approved by the various licensing bodies, can be obtained. For fuller particulars students should write to the Dean or Secretary of the institution.

BIRMINGHAM.—University Dental Department and Dental Hospital.

BRISTOL.—University Faculty of Medicine, Dental Department.

DUBLIN.—School of Dentistry in connection with the Incorporated Dental Hospital of Ireland, Lincoln Place. Fee, 15*l.* 15*s.* per annum. Dean, Mr. George Sheppard, L.D.S., Eng., F.R.C.S.I.

EDINBURGH.—Dental Hospital and School, 31 Chambers Street. Fee, 31*l.* 10*s.* for two years. Dean, Mr. William Guy, 11 Wemyss Place.

GLASGOW.—Dental Hospital and School, 15 Dalhousie Street. Dean, W. D. Anderson. Fees for dental lectures and two years' hospital practice, 35*l.* 14*s.* Secretary, Mr. D. M. Alexander, 97 West Regent Street.

LEEDS.—University School of Dentistry.

LIVERPOOL.—University School of Dental Surgery and Dental Hospital, Pembroke Place and Boundary Place.

LONDON.—*Charing Cross Hospital Dental Department*, Chandos Street, W.C.—Composition-fee (two years), 57l. 15s. Dean, Mr. F. C. Wallis, F.R.C.S.

Guy's Hospital Dental School, London Bridge, S.E.—The fees for dental lectures and demonstrations and dental practice only, for L.D.S. Eng., are 50l. Inclusive fee for students for L.R.C.P., M.R.C.S., and L.D.S. Eng. courses of instruction is 199l. 10s. Instruction in dental mechanics costs 52l. 10s. per annum. The whole curriculum for the L.D.S. is provided here. Dean, Dr. H. L. Eason.

King's College, Strand, W.C.—Composition-fee for L.D.S. course, 36l. 15s. Dean, Mr. H. Willoughby Lyle, M.D., F.R.C.S.

London Hospital, Mile End, E.—The new dental school opens on October 3. Particulars from the Dean, Mr. W. Wright, M.B., F.R.C.S.

Middlesex Hospital, Berners Street, W.—Composition-fee, 56l. 14s. Dean, H. Campbell Thomson, M.D., F.R.C.P.

National Dental Hospital and College, Great Portland Street, W.—Fees for complete curriculum, comprising two years' mechanics and two years' hospital practice and lectures, 120l.; the fee for special lectures and hospital practice is 40l., and for mechanical training, 50l. per annum. Dean, Mr. Sidney Spokes.

Royal Dental Hospital of London and London School of Dental Surgery, Leicester Square, W.C.—Fees for instruction in dental mechanics and the two years' hospital practice and lectures for L.D.S., 150l.; or hospital practice and lectures only, 53l. 3s. The approximate cost of education for the diploma is given in the prospectus at 280l. 14s., including fees, books, and instruments. Dean, Mr. W. H. Dolamore, M.R.C.S., L.R.C.P., L.D.S.

St. Bartholomew's Hospital, Smithfield, E.C.—For particulars of the dental department, apply to the Dean of the School, Mr. T. W. Shore.

St. George's Hospital, Grosvenor Place, S.W.—Annual composition-fee, 15l. 15s. Dean, Dr. E. I. Spriggs.

St. Mary's Hospital, Paddington, W.—Dental course, 52l. 10s. Dean, Sir John Broadbent, Bart.

St. Thomas's Hospital, Albert Embankment, S.E.—Dean, Mr. Cuthbert Wallace, M.B.

University College Hospital, Gower Street, W.C.—Dean, Dr. H. B. Shaw.

Westminster Hospital, Broad Sanctuary, S.W.—Dean, Mr. E. Rock Carling, F.R.C.S.

MANCHESTER.—University School of Dental Surgery and Victoria Dental Hospital.

NEWCASTLE-ON-TYNE.—Durham College of Medicine, Dental Hospital and School, Handsides Buildings, Percy Street.

SHEFFIELD.—University Dental Department for R.C.S. diploma.

Veterinary Surgery.

The practice of veterinary surgery is regulated by the Veterinary Surgeons Act, 1881, and entrusted to the Royal College of Veterinary Surgeons, Red Lion Square, London, W.C., a corporate body to which a charter was granted in 1844. It stands in regard to veterinary surgery in the same position as the Pharmaceutical Society in pharmacy, except that the College has no teaching functions, it is purely an examining body. It is the only institution in this country with the power to grant licences to practise veterinary surgery. The educational functions are provided by affiliated colleges in London, Edinburgh, Dublin, Glasgow, and Liverpool, and the examinations are held in London and the provinces. The Royal College requires candidates for the diploma M.R.C.V.S. to pass an examination in general knowledge recognised by the General Medical Council, and the list of approved examinations which the Royal College conducts is the same as that of the General Medical Council. The list has been brought up to date, and includes the newly constituted Universities in Ireland and the Senior School examinations of the English Universities. In England the Medical Preliminary examination of the College of Preceptors, and in Scotland the Educational Institute examination are those which veterinary students usually enter for. The last-named examination does not, however, satisfy the conditions under which students can claim payment of fees from the Carnegie Trust. After passing the examination the student has to enter upon a four-year course of study at one of the affiliated veterinary colleges and pass an examination at the end of each college year, the Final not until he reaches the age of twenty-one. The subjects of the curriculum are indicated by the following outlines of the examination subjects:

First Year (Class A):

1. Anatomy of the domesticated animals.
2. Chemistry and elementary physics.
3. Biology: Elementary zoology and botany.

Second Year (Class B):

1. Anatomy of the domesticated animals.
2. Histology and physiology.
3. Stable management, the manipulation of the domesticated animals, and the principles of shoeing.

Third Year (Class C):

1. Morbid anatomy, pathology, and bacteriology.
2. Materia medica, pharmacy, therapeutics, and toxicology.
3. Veterinary hygiene and dietetics.

Fourth Year (Class D):

1. Principles and practice of veterinary medicine.
2. Principles and practice of veterinary surgery.

An examination is held at the conclusion of each year's course in the subjects stated. The fee for each examination

is 5l., with a registration fee of 1l. on passing the Final examination. The re-examination fee is 3l. 3s.

The examination for the Fellowship of the Royal College of Veterinary Surgeons can only be taken by members who have held the diploma for five years. A thesis has to be presented and defended before the Board of Examiners, and, in addition, there is a written and practical examination in veterinary medicine and surgery, pathology and bacteriology, hygiene and sanitary science. Particulars of the examinations are supplied by Mr. Fred Bullock, Secretary of the R.C.V.S., 10 Red Lion Square, London, W.C.

VETERINARY DEGREES.

The London University grants the degree B.Sc. in veterinary science. Candidates must pass the Matriculation examination of the University, which, of course, entitles them to commence their professional studies for the M.R.C.V.S.; and subsequently they are required to study for four years, passing a Preliminary examination in inorganic chemistry and physics, an Intermediate in organic chemistry, biology, veterinary anatomy, and veterinary physiology, and at the end of the four years a Final examination in veterinary pathology and veterinary hygiene. Similar degrees are granted by the Universities of Edinburgh and Glasgow, the University of Manchester grants a diploma in veterinary State medicine, and the Liverpool University grants a diploma in veterinary hygiene. These degrees and diplomas are only granted to those who hold the registrable qualification to practise veterinary medicine.

AFFILIATED COLLEGES.

The following are the institutions where can be obtained veterinary instruction required by candidates for the M.R.C.V.S. diploma:

LONDON.—*Royal Veterinary College* (founded 1791; incorporated 1875), Great College Street, Camden Town, N.W.—Educational fee, 84l., paid in four instalments, and 2l. 12s. 6d. library fees. There are also fees for occasional students as follows: Anatomy, 3l. 8s.; botany, 3l. 3s.; chemistry, 5l. 5s.; pathology, 5l. 5s.; physiology, 5l. 5s.; practical chemistry, 3l. 3s.; practical histology, 3l. 3s.; practical pathology, 5l. 5s.; surgery, 5l. 5s.; and veterinary medicine, 5l. 5s. Post-graduate courses are also held, for which the fee is 10l. 10s. Principal and Dean, Professor Sir John McFadyean, M.R.C.V.S. Secretary, Mr. R. A. N. Powys.

DUBLIN.—*Royal Veterinary College of Ireland*, Pembroke and Shelbourne Roads, Balls Bridge.—Fees, 21l. per session, with 1l. 1s. entrance-fee. Principal, Professor A. E. Mettam, B.Sc., M.R.C.V.S.

EDINBURGH.—*Royal (Dick) Veterinary College* (founded 1823).—Entrance and class fees, 72l. 9s., in four payments.

with an extra fee of 5*l.* 5*s.* for students returning for a portion of the fourth year's class. The Carnegie Trust pays students' fees at this College if the conditions laid down by the trustees are fulfilled. Principal, Professor O. Charnock Bradley, M.D., D.Sc., M.R.C.V.S. Secretary, Mr. Robert Anderson, S.S.C., 37 York Place, Edinburgh.

GLASGOW.—*Glasgow Veterinary College* (established 1862; incorporated 1909), Buccleuch Street, Garnethill.—The College is under the management of a Board of Governors, and is recognised as a central institution under the Education (Scotland) Act, 1908. A complete course of instruction is

given in the subjects of examination for the diploma of the Royal College of Veterinary Surgeons. Fee, 70*l.* 7*s.* for four years. There are a number of bursaries for which students are eligible. The Carnegie Trust pays the fees of students who fulfil the conditions. Principal, Professor J. McCall, F.R.C.V.S. Secretary, Mr. Alexander Russell, 54 West Nile Street, Glasgow.

LIVERPOOL.—*University Veterinary School*.—Fees for four years' lectures and all other instruction, 75*l.* 12*s.*, payable in four instalments of 18*l.* 18*s.* Secretary of Veterinary Board, Mr. J. Share-Jones, M.Sc., F.R.C.V.S.

Science.

THE pharmaceutical training forms an admirable basis for proceeding to specialisation in one of the many branches of the analytical profession, but more especially to that of food and drug analysis. The title "analyst" is not protected, but the successful chemical consultant must possess evidence of good scientific training, while for appointments as public analysts under the Sale of Food and Drugs Acts the Local Government Board practically insist on local authorities appointing analysts who hold the special certificate of the Institute of Chemistry in therapeutics, pharmacology, and microscopy. Analysts under the Fertilisers and Feeding-stuffs Act must also be Fellows of the Institute of Chemistry. Branch E (Food and Drugs, etc.) of the Institute's Final examination is accordingly a favourite one with pharmacists entering the analytical profession, but it is also usual to take a degree in Science as well. A three years' curriculum is the minimum training which covers the two examinations, although if the student proceeds *sine curriculo* to the external degrees of the University of London or the National University of Ireland, his degree will allow him to enter for the Intermediate examination of the Institute of Chemistry without undergoing a curriculum.

Chemistry.

THE INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND, 30 Bloomsbury Square, London, W.C., was founded to elevate professional chemistry by promoting the better education of persons desirous of becoming analysts or chemical advisers by examining candidates and granting certificates of competency, and by insisting on the observance of strict rules of professional conduct. The Fellowship of this Institute (F.I.C.) is a definite qualification for practice. An outline of the regulations of the Institute are here given:

To register as a student, the candidate must be at least seventeen years of age, and must have passed an approved Preliminary examination. A list of approved certificates is given in the Institute's book of regulations, which includes all other information regarding the examinations, and can be obtained *gratis* from the Registrar at the above address. The student's annual registration-fee is 5*s.* Three courses of procedure are available. The student must study for three years at an approved college, or become a pupil for two years with a F.I.C., and go to college for two other years, or have taken the B.Sc. degree in chemistry and physics.

Before the student is allowed to enter for the *Intermediate examination*, he must satisfy the Council that he has undergone a course of instruction, in accordance with the regulations, in theoretical and practical chemistry, physics, mathematics, and a fourth subject selected from the following: Higher physics, advanced mathematics, mechanics or chemical engineering, metallurgy, geology and mineralogy, physiology, bacteriology, agriculture, elementary botany, or elementary biology. The fee for the Intermediate examination is 5*l.* 5*s.* Candidates who have taken first or second class Honours in chemistry or have obtained special distinction in chemistry for the degree examination of an approved university, can, generally speaking, be admitted directly to the Final examination of the Institute.

All candidates must pass the *Final examination* (fee 5*l.* 5*s.*, or for candidates exempted from the Intermediate examination 10*l.* 10*s.*). In addition to a general knowledge of chemistry, special knowledge is required in the one branch or which the candidate enters—viz., mineral chemistry, metallurgical chemistry, physical chemistry, organic chemistry, analysis of food, drugs, fertilisers and feeding-stuffs, oils, and water (including a compulsory examination in therapeutics, pharmacology, and microscopy), or biological

chemistry. Candidates for the examination in chemistry of food and drugs, etc., which is recognised by the Local Government Board in connection with appointments of public analysts, are now required to produce evidence of training in elementary botany. Candidates in the branch of biological chemistry must show that they have taken a course of elementary biology. All candidates for the Final examination are required to translate French and German technical literature into English, with the aid of dictionaries, to the satisfaction of the examiners.

The candidate on passing this examination is granted the Associateship of the Institute of Chemistry, the Fellowship being conferred three years later if evidence be produced that the Associate has during that time been continuously engaged in analytical chemistry. Associates or Fellows are allowed to enter for further examinations in any of the following branches only: (1) Food and drugs, to qualify for public analyst, fee 5*l.* 5*s.*; (2) biological chemistry, fee 5*l.* 5*s.*; (3) special examination in technological chemistry, for which practical technological training is required in the branch selected—*e.g.*, gas-manufacture, steel-manufacture, or the fat and oils industry—fee 3*l.* 3*s.* Special certificates are given to candidates who pass these examinations. The entrance fee to the Fellowship is 5*l.* 5*s.* There is also an annual subscription for Fellows and Associates of 1*l.* 1*s.*, or a life composition-fee of 21*l.*

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY.—This institution or group of associated colleges at South Kensington was incorporated in 1907 for giving highly specialised instruction in industrial science. It carries on the work of the Royal College of Science, the Royal School of Mines, and the City and Guilds College (formerly known as the Central Technical College) is an integral part. Candidates for admission must be over seventeen years old, and show that they have received a good secondary education. The diploma of A.R.C.S. is issued after three years' satisfactory study in mechanics, physics, chemistry, botany, zoology, and geology, and of A.R.S.M. after a satisfactory four years' training in mining and metallurgy. A diploma of the Imperial College of Science and Technology is also awarded. For this and other particulars see the Calendar of the Imperial College, published by Messrs. Eyre & Spottiswoode, Ltd., London, E.C., price 6*d.* The college fees are: First year, 39*l.*; second year, A.R.C.S. 29*l.*, A.R.S.M. 40*l.*; third year, 10*l.* to 32*l.*

CITY AND GUILDS OF LONDON INSTITUTE.—This institute includes among its four main branches the City and Guilds Central Technical College and the City and Guilds Technical College, Finsbury.

The City and Guilds CENTRAL TECHNICAL COLLEGE, Exhibition Road, S.W., forms the Engineering Section of the IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY, at which latter institution the instruction in chemistry and physics is now given. The diploma of A.C.G.I. is awarded after a satisfactory three years' course of study. The age admission is sixteen, and students must take the Matriculation examination of the Institute.

The City and Guilds TECHNICAL COLLEGE, FINSBURY, provides day courses of instruction and evening classes in electrical engineering, mechanical engineering, and industrial and technical chemistry. The day courses cover a period of two to three years. Students must be fifteen years old, and have passed the Entrance examination which is held yearly in September. Certificates are awarded to students of sufficient merit.

Degrees in Science.

A curriculum of at least three academical years is required by practically all the Universities in the United Kingdom; the University of London and the National University of Ireland providing exceptions.

The University of London allows entry for the Intermediate examination only after a year lapsed since matriculation. For the Intermediate examination (fee 5*l.*) four subjects selected from the following seven must be taken: Pure mathematics, applied mathematics (mechanics), experimental physics, chemistry, botany, zoology, and geology. Honours may be taken in any subject, but the compulsory number is not decreased thereby. The Final examination may be taken one year after passing the Intermediate, but three years must elapse between the Final and the Entrance examination. The subjects for the Final Pass examination must be three of the ten prescribed subjects. The candidate for an Honours degree takes one of the subjects, with an appropriate subsidiary subject. Longer notice of entry is required from Honours candidates, many of whom have first taken the Pass examination. The fee is 5*l.* Internal students of the University undergo, after registration on Matriculation, a course of instruction either at a school of the University or under recognised teachers of the University. Degrees are granted in several branches of science besides natural and physical science. Details concerning all these matters will be found in the regulations for degrees of science, obtainable on application to the Principal, University of London, South Kensington, London, S.W. To obtain the D.Sc. degree a graduate in science may submit a thesis, based upon his own research, not less than two years after graduation (fee, 20*l.*)

The English Provincial Universities require subjects similar to those at the London University, the student attending an approved course of study subsequent to matriculation. The Intermediate and Final examinations are then taken in the subjects of the curriculum. For full particulars consult the Calendars of the Universities at Birmingham, Leeds, Liverpool, Manchester, and Sheffield.

At Scots Universities the student taking a science degree enters the University after taking the Preliminary, and attends seven of the courses of instruction in the curriculum for three academical years. Only four of the seven subjects need be taken at the particular University whose degree is desired, three taken elsewhere being accepted.

At the National University of Ireland the candidate may present himself for the B.Sc. degree examination a year after graduating in any Faculty in the University. Fee 1*l.*, with a further 3*l.* on admittance to degree.

Technological Branches of Science, such as agricultural chemistry, dyeing, and brewing, are taught in many technical colleges, especially in districts where such industries are of great importance. Advice in regard to these specialised subjects must be sought from the Secretaries of the local institutions.

The chief institutions where instruction in scientific subjects is obtainable are enumerated below:

LONDON.

+ BATTERSEA POLYTECHNIC, Battersea Park Road, S.W.—Approved courses (day and evening) for the London University are provided in chemistry, botany, physics, and engineering. There is also a diploma course (three years) in chemistry, fee 13*l.* 15*s.* per year. Full particulars from the Secretary, Mr. J. Harwood.

+ BIRKBECK COLLEGE, Bream's Buildings, Chancery Lane, E.C.—Complete courses (day and evening classes) for science degrees. Fees: Day, 17*l.* 10*s.* per session; evening, 8*l.* per session. Secretary, Mr. H. Wells Eames.

+ BOROUGH POLYTECHNIC, Borough Road, S.E.—A series of ten technical lectures on essential oils commence on October 4. Chemistry classes are also held. Principal, Mr. C. T. Millis.

+ CITY AND GUILDS CENTRAL TECHNICAL COLLEGE, Exhibition Road, S.W.—Tuition in chemistry is now given at the Imperial College of Science and Technology. (See also Technical College, Finsbury.)

+ CITY OF LONDON COLLEGE, White Street, Moorfields, E.C.—Evening classes in chemistry, botany, and physics

* Schools of the University of London.

+ Institutions having teachers recognised by the University of London.

cost 10*s.* to 30*s.* for non-members; also Minor chemistry course, fee 30*s.* to non-members. Secretary, Mr. David Savage.

* EAST LONDON COLLEGE, Mile End Road, E.—Intermediate and Final B.Sc. courses: evening 5*l.* 5*s.*, day 10*l.* 10*s.* Principal, Mr. J. L. S. Hatton, M.A.

+ GOLDSMITHS' COLLEGE, New Cross, S.E.—Degree classes (evening) in chemistry, botany, and physics. Fee, 21*s.* and upwards. Warden, Mr. W. Loring, M.A.

* IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY, South Kensington, S.W.—Degree and diploma courses in science and engineering. Sessional fees, 16*l.* to 41*l.*

* KING'S COLLEGE, Strand, W.C.—Composition-fee in the Faculty of Science, 31*l.* 10*s.* per annum. Secretary, Mr. Walter Smith.

+ NORTHERN POLYTECHNIC INSTITUTE, Holloway, N.—Degree courses (day) in science, fees 6*l.* 6*s.* to 15*l.* 15*s.*; evening classes, single subjects, fees 5*s.* to 50*s.* Secretary, Mr. W. M. Macbeth.

* ROYAL COLLEGE OF SCIENCE, Exhibition Road, S.W.—See Imperial College of Science and Technology.

* ROYAL HOLLOWAY COLLEGE, Englefield Green, Surrey.—For women students only, mainly residential. Degree courses in science, fee 33*l.* 6*s.* 8*d.*, or without residence, 12*l.*

+ SIR JOHN CASS TECHNICAL INSTITUTE, Jewry Street, Aldgate, E.C.—Evening courses in chemistry, physics (fees 4*s.* to 10*s.*), and also special courses on the fermentation industries. B.Sc. course provided. Principal, Dr. Chas. A. Keane, F.I.C.

+ SOUTH-WESTERN POLYTECHNIC, Manresa Road, Chelsea, S.W.—Evening courses in chemistry, pharmacy, and botany adapted for the Minor and Major examinations, 25*s.* per session. B.Sc. day course, 15*l.* per session; evening, 2*l.* per session. Secretary, Mr. H. B. Harper.

+ TECHNICAL COLLEGE, Leonard Street, Finsbury, E.C.—Constituent of City and Guilds of London Institute. Courses similar to those at the Central Technical College, but shorter. Fee, 20*l.* per session. Registrar, Mr. K. Dove.

* UNIVERSITY COLLEGE, LONDON, Gower Street, W.C.—Fees for three years' complete B.Sc. course, including chemistry, 111*l.* 1*s.* Secretary, Mr. W. W. Seton, M.A.

WANDSWORTH TECHNICAL INSTITUTE, High Street, Wandsworth, S.W.—Evening classes in science subjects suitable for pharmaceutical students. Fee, 7*s.* 6*d.* to 15*s.* per subject.

+ WEST HAM TECHNICAL INSTITUTE, Romford Road, E.—Evening classes in science. Also day classes in chemistry and physics, fee from 4*l.* 4*s.* to 7*l.* 7*s.* per session. Principal, Mr. A. F. Hogg, M.A.

+ WOOLWICH POLYTECHNIC, Lower Market Street, Woolwich.—Instruction is given in chemistry, metallurgy, and botany. Fees, 5*s.* to 40*s.* per session. Clerk, Mr. A. J. Naylor.

THE PROVINCES.

ABERDEEN.—University.—Degree courses in science.

ABERYSTWYTH.—University College of Wales.—Fee for the science course, 10*l.* per session, exclusive of practical work, which costs 1*l.* 1*s.* to 4*l.* 4*s.* per term.

BANGOR.—University College of North Wales.—Inclusive fees as at Aberystwyth.

BARROW-IN-FURNESS.—Technical Schools, Abbey Road.—Evening classes in chemistry, fee 7*s.* 6*d.* to 15*s.* per session.

BELFAST.—Queen's University of Belfast.—Class fees in the Faculty of Science, 1*l.* 1*s.* to 3*l.* 3*s.*, except practical chemistry, up to 7*l.* 7*s.*

BIRMINGHAM.—University.—B.Sc. degree course in pure science costs about 12*l.* 12*s.* to 23*l.* per year. Municipal Technical School, Suffolk Street.—Evening classes in science cost 5*s.* to 15*s.* per session. Principal, Dr. W. E. Sumpner.

BRADFORD.—Municipal Technical College.—Day course for science qualification or technological (dyeing) subjects, fee 13*l.* Evening: B.Sc. course, 21*s.*

BRIGHTON.—Municipal Technical College.—Day courses for London University examinations. Fee, 5*l.* 5*s.* per term.

BRISTOL.—University.—Degree courses in science. Also evening classes in chemistry and botany; fee 10*s.* per session. Merchant Venturers' Technical College.—Chemistry and physics classes (evening), 5*s.* to 10*s.* per subject. Day classes are also held.

CARDIFF.—University College of South Wales and Monmouthshire.—Classes are given in science subjects.

CORK.—University College.—A constituent of the National University of Ireland. Class fees usually 1*l.* to 3*l.*, except practical chemistry, 5*l.* Registrar, Mr. J. P. Molohan, M.A.

DERBY.—Technical College.—Instruction in chemistry, botany, and physics. Fees: Day, 10*l.* 10*s.* per course, or 10*s.* 6*d.* per subject per term (except pharmaceuticals, 1*l.* 1*s.*); evening, 10*s.* 6*d.* to 1*l.* 1*s.* per year. Registrar, Mr. J. L. Rees.

DUBLIN.—Royal College of Science.—Three years' course for A.R.C.Sc.I. Registrar, Mr. P. A. E. Dowling.

DUNDEE.—University College.—Botany, chemistry, and physics are taught in day classes. Fees, 1*l.* 11*s.* 6*d.* to 4*l.* 4*s.*

for each winter or summer session. *Technical College*.—Sound instruction in elementary science is given here.

EDINBURGH.—*Heriot-Watt College, Chambers Street*.—Composition-fee for complete day courses in chemistry and physics, 3*l.* 3*s.* to 15*l.* 15*s.* per session. Evening classes in chemistry, botany, physics, and pharmaceuticals, 5*s.* to 21*s.* per session.

EXETER.—*Royal Albert Memorial College*.—Degree course in science; composition-fee, 12*l.* 18*s.* per year. Evening classes in science, 5*s.* to 10*s.* per subject each session. Registrar, Mr. A. Woodbridge.

GALWAY.—*University College*.—A constituent of the National University of Ireland. Courses and fees as at Cork.

GLASGOW.—*University*.—Degree courses in science. Class fees in science subjects, 2*l.* 2*s.* to 4*l.* 4*s.* per session, with higher fees (10*l.* 10*s.*) for practical chemistry. *Technical College*.—Day classes in chemistry, 1*l.* 11*s.* 6*d.* to 3*l.* 3*s.* Evening classes in chemistry, botany, materia medica, and pharmacy, 2*s.* 6*d.* to 2*l.*

HUDDERSFIELD.—*Technical College*.—Full-day courses (fee, 6*l.* 6*s.* per session) and evening classes (fee, from 10*s.* 6*d.* per session) in chemistry, physics, botany, materia medica, pharmacy, and technological subjects. Evening science courses. Fee, from 10*s.* 6*d.* per session. Secretary, Mr. T. Thorp.

HULL.—*Municipal Technical College, Park Street*.—Evening classes in chemistry. Fees, 5*s.* to 15*s.* per course. Principal, Mr. T. Luxton, B.A., B.Sc.

LANCASTER.—*The Storey Institute*.—Evening classes in chemistry, physics, and biology. Fee, 4*s.* per subject, or 7*s.* 6*d.* per course (including practical work).

LEEDS.—*University*.—Lecture courses in science degree subjects. Composition-fee, 27*l.* per session. *Central Technical School, Cookridge Street*.—Evening courses in chemistry, adapted to the University degrees and diplomas in science. Seasonal fee, usually 7*s.* 6*d.*

LIVERPOOL.—*University*.—Course for degrees in science or special purposes. Course fees in science, 3*l.* to 4*l.* Laboratory work, 6*l.* to 21*l.* per course.

MANCHESTER.—*University*.—Degree courses in science (including pharmacy). Fees, 20*l.* to 30*l.* per session. Registrar, Mr. Ed. Fiddes, M.A. The *School of Technology* also gives sound education in science.

NEWCASTLE-UPON-TYNE.—*Armstrong College*.—Fees for curriculum of B.Sc. Durham in pure science, 60*l.* Evening classes are held. Secretary, Mr. F. H. Pruett, M.A.

NOTTINGHAM.—*University College*.—London University B.Sc. course. Composition-fee, 6*l.* per term. Evening classes in chemistry, physics, botany, and materia medica. Fee, 7*s.* 6*d.* to 10*s.* 6*d.* per course. Registrar, Mr. T. P. Black, M.A.

PLYMOUTH.—*Municipal Science, Art, and Technical Schools*. Day courses in science subjects cost 1*l.* to 5*l.* 5*s.* per subject, or degree course 12*l.* 12*s.* per term. Evening classes, 5*s.* to 10*s.* each. Education Secretary, Mr. E. C. Cook.

READING.—*University College*.—B.Sc. course of London University examination, 24*l.* per session. Materia-medica class (Wednesday afternoons), 1*l.* per course. Evening classes in chemistry and botany, 5*s.* to 12*s.* 6*d.* each.

ST. ANDREWS.—*United College*.—Class fees in University degree course cost 2*l.* 2*s.* to 4*l.* 4*s.* for each winter and summer session.

SHEFFIELD.—*University*.—Degree courses in science. Seasonal lecture fees, 1*l.* 11*s.* 6*d.* to 4*l.* 4*s.* per course; laboratory fees, 3*l.* 3*s.* to 16*l.* 16*s.* per session. Evening classes at low fees. Registrar, Mr. W. M. Gibbons.

SOUTHAMPTON.—*Hartley University College*.—Composition-fee for B.Sc. courses, 24*l.* per session. Evening classes in science subjects at low fees. Principal, Dr. S. W. Richardson.

SWANSEA.—*Technical College*.—Chemistry, physics, and botany at evening classes. Fees: Lectures, 5*s.*; practical work, 10*s.* per subject. Day courses are held. Principal, W. Manseigh Varley, M.A., D.Sc.

Optical Diplomas.

There is still a good demand for the services of sight-testers and opticians, the large number of chemists who have taken up this side-line having mostly found a remunerative outlet for their knowledge. It is not that the number of people with defects of sight is on the increase, but that with the spread of education it is becoming recognised that optical defects can be readily corrected. It is desirable to encourage the well-founded idea that it is not necessary to resort to medical practitioners for relief from defects of sight; in fact, as very few doctors have had any training in sight-testing, it is to the advantage of the public that there exists a well-trained body of opticians who fit and supply glasses at a moderate cost. The well-to-do who can afford to consult an oculist will do so and receive advice from experts, and in filling the prescriptions of oculists the optician will find an outlet for the

exercise of his talents second only to the knowledge obtained by long experience in sight-testing.

A chemist who intends taking up the subject should obtain a copy of "The Chemist-Optician" (4*s.*, Office of the *C. & D.*), which we publish to show the scope of the knowledge required. We also strongly advise aspirants to obtain an optical diploma, which is evidence that the holder has gone through a proper training. These diplomas are recognised by most medical practitioners, but in case of doubt an opportunity should be taken to explain the scope of the examinations involved in obtaining them. The public are learning to recognise that a diploma is a sign that the chemist-optician can be trusted in optical matters.

There are two diploma schemes now working in this country. Of these the best known is that of

THE SPECTACLE MAKERS' COMPANY, 11 Temple House, Temple Avenue, London, E.C. The diploma scheme of the Company was founded in 1893, and has been revised at intervals on progressive lines. The Company take a fatherly interest in their diploma-holders, and periodically advertise the names in the pages of the leading journals. Recently a general policy of insurance in favour of S.M.C. diplomates has been taken out. This covers certain legal risks incidental to the profession of sight-testing, and is only provisional, an individual insurance scheme being in contemplation. There are now 740 holders of the Company's diploma, and a good proportion of these are also chemists. The examination syllabus has been printed in THE CHEMIST AND DRUGGIST on more than one occasion, so that it will only be necessary to give the main features of the scheme, which are as follows:

There are two examinations:

(1) The Preliminary examination, consisting of (a) mathematics and arithmetic, and (b and c) general and practical optics.

(2) The Final examination, consisting of (d) visual optics and sight-testing, (e) practical frame fitting and measurement, (f and g) lenses, the eye, instruments, and refractive errors, and (h) a practical examination in the application of lenses to correct errors of vision.

Candidates who have passed any recognised examination in the mathematical subjects, specified in section a, are exempt from that examination. Candidates over the age of thirty years, who have been engaged in the optical industry for over seven years, are also exempt from section a. Candidates over the age of forty years, who have spent ten years in the optical industry, before the year 1908, are further exempt from section c of the Preliminary examination. The Pharmaceutical Society's Major and Minor examinations exempt from section a except trigonometry. The next examination will be held at St. Bride Institute, Ludgate Circus, E.C., on October 30 and following days. Entries must be received on or before September 30. Candidates should note that at the last examination the practical side of optics received more attention. It is, therefore, as well to devote a larger portion of time to practical work than has been the case hitherto.

The books recommended in the syllabus are: Consterdine and Barnes's "Practical Mathematics"; Laurance's "General and Practical Optics"; Glazebrook's "Light"; Thompson's "Optical Tables and Data"; Phillips's "Spectacles and Eyeglasses"; Laurance's "The Eye"; Hartridge's "Refraction"; Taylor's "Key to Sight Testing"; Johnson's "Optical Instruments"; Glazebrook's "Heat and Light"; Percival's "Optics"; Ganot's "Physics"; Tscherning's "Physiologic Optics"; Glazebrook's "Practical Physics"; Johnson's "Photographic Optics"; Gage's "The Microscope"; Maddox's "Ophthalmological Prisms"; Taylor's "Frame-fitting"; and the "Optician's Manual." The fees are three guineas for each examination, and in addition the diploma costs four guineas. Those who take up the freedom of the City of London, which they are entitled to when they have become freemen of the Spectacle Makers' Company, can do so on payment of one guinea. There are small annual payments to the Company for "quarterage." The full prospectus, with application form, can be obtained from the Clerk of the Company, Colonel T. Davies Sewell, F.R.A.S., 11 Temple House, Temple Avenue, London, E.C.

THE BRITISH OPTICAL ASSOCIATION (Incorporated 1895). Secretary, Mr. J. H. Sutcliffe, F.R.S.L., 199 Piccadilly, London, W. The Association's scheme consists of two grades of examination, Membership (dioptric grade) and Fellowship, and these are held twice yearly in London (May and November), or in the provincial centres when a sufficient number of candidates desire it. The next examination is to be held at the Glasgow and West of Scotland Technical College, Glasgow, on September 12 and 13.

Candidates for the dioptric grade are required to produce a Preliminary certificate from an approved examining body. (The list of approved examining bodies is similar to that of the Pharmaceutical Society of Great Britain.) The examination is practical and theoretical, and the theoretical part can be taken separately and in advance of the practical work, although no certificate is given until the practical examination is passed. The subjects in which the candidate is examined are lenses, frames, subjective sight testing, dissection, physical optics, physiologic optics, anatomy and physiology of the eye, phorometry, and ethics.

For the Fellowship examination candidates must hold the dioptric certificate, and are examined in similar subjects as before, but a deeper knowledge is required, and prismetry, ophthalmoscopy, embryology, and microscopical demonstrations are included.

The examination fees are: Dioptric Grade, 3*l.* 3*s.*; Fellowship, 5*l.* 5*s.* Qualified chemists of Great Britain and Ireland are exempt from portions of the Dioptric Grade examination. The syllabus is at the present time under revision by the Council, and it is possible that there will be several drastic alterations, especially in regard to the requirements in the practical portion of the examinations.

Optical Instruction.

THE BRITISH OPTICAL INSTITUTE, Mount Edgembe Gardens, Clapham Road, London, S.W., conducted by Mr. Max Coque, B.Sc., prepares students for the examinations of the British Optical Association and the Spectacle Makers' Company. The classes are held during the day and in the evening. Postal instruction is also given. The Institute is well equipped for practical work, and has in connection with it a sight-testing clinic.

MR. A. E. GREY, 13 and 14 Spencer Street, Clerkenwell, London, E.C., receives pupils for personal instruction in the practical work and sight-testing part of the Spectacle Makers' Company's and British Optical Association's syllabus.

MR. J. C. KIDD, 551 Cheetham Hill, Manchester, specialises in optical instruction for the examinations of

either of the examining bodies. Mr. Kidd issues a syllabus of the courses of instruction which he carries on.

MR. LIONEL LAURANCE, Orthos House, 21 John Street, Bedford Row, London, W.C., conducts, in association with Mr. H. Oscar Wood, courses of instruction in preparation for the examinations of the Spectacle Makers' Company. The tuition is both in class and by correspondence. The fees for the Preliminary examination are 5*l.* 5*s.*, and for the Final examination in sight-testing 5*l.* 5*s.* Mr. Laurance is Official Instructor to the Spectacle Makers' Company, and is the author of text-books on the Eye and General Optics. A special reduction in fees is made to members of the Society of Chemist-Opticians.

LONDON SCHOOL OF OPTICS, 47 Hatton Garden, London, E.C.—This school, carried on in connection with the Anglo-American Optical Co., provides instruction in general refraction and sight-testing, both in class and by correspondence. Recent successes include the first prize-winner at the S.M.C. examination in November, and the first and second prize-winners at the May examination. Mr. G. E. Druiff, one of the principals, publishes a book on "Refraction" (10*s.* 6*d.*), which is used by the students as a text-book.

THE NORTHAMPTON POLYTECHNIC INSTITUTE, Clerkenwell, London, E.C.—The courses in optics are held in the British Horological Institute in Northampton Square. The full course of technical optics occupies two years, and consists of lectures, laboratory work, drawing-office work, tutorial classes, and workshop practice. A diploma in technical optics is awarded on the completion of a two-years' course with satisfactory records in examination and class-work. Evening students also receive certificates of attendance and satisfactory progress. The winter term begins early in October. The fees are 15*l.* per session (October to July). Partial courses (two afternoons a week) may also be taken, for which the fee is 3*l.* per session, and there are afternoon classes suitable for chemists in business who cannot leave during the day. The whole field of optics is covered both theoretically and practically. The prospectus of the optical department can be had by applying to Dr. R. Mullineux Wahmsley, the Principal.

GLASGOW COLLEGE OF OPTICS, Blythwood Chambers, 180 West Regent Street, is conducted by Mr. T. S. Baird and Mr. Lothian. Students are prepared for the examinations of the British Optical Association and the Spectacle Makers' Company.

MR. J. G. WALLBRIDGE, School of Optics, 227 Kensington, Liverpool, conducts optical classes, chiefly through the post.

Scholarships and Prizes.

THE opportunities which present themselves to pharmaceutical students in the form of scholarships and prizes are not numerous. We give brief particulars of them below, and while some are open to all students, it must be noted that others are strictly limited in their scope. Full particulars can be obtained on application at the address mentioned in connection with the competition.

NATIONAL SCHOLARSHIPS.—*Local exhibitions* in science are granted at the discretion of the local education authority (who must contribute about half of the funds) usually by competition in connection with the Board of Education's annual examinations in science. The exhibitor may pursue his studies (tenable on application for three years) at the local institution, or may exercise his option of taking his instruction at the Imperial College of Science and Technology. A maintenance allowance is included in the award. The standard attained in the competition must be comparable with that of a Royal or of a National Scholarship.

Royal Scholarships to the number of eighty (not less than twenty awarded in 1912), tenable at the Imperial College of Science and Technology, are awarded by the Board of Education on the results of their evening examinations (practically for the highest marks obtained on Honours subjects). The scholarship provides free lectures and laboratory work and a maintenance allowance of 60*l.* with third-class return fare home once each session.

The Free Studentships in science are awarded under similar conditions as the Royal Scholarships, and total forty-five (not less than eleven in 1912). The studentship provides

free tuition at the Imperial College of Science and Technology.

Address the Board of Education, Whitehall, London, S.W., for particulars of the three above-mentioned awards.

JACOB BELL SCHOLARSHIPS.—Two scholarships are offered annually by the Pharmaceutical Society as a memorial of Jacob Bell. The award comprises free education at the Society's school and 25*l.* in cash, with books to the value of 2*l.* 10*s.* The scholarships are open only to student-associates of the Society not less than twenty or more than twenty-two years of age who have been engaged for not less than three years in the pharmacy (*i.e.*, open shop) of a pharmaceutical chemist or a chemist and druggist. The examination is held on the third Tuesday in June, at London, Edinburgh, and Manchester. Application for admission must be made on or before June 1 to Mr. Richard Bremridge, 17 Bloomsbury Square, London, W.C. The subjects of the examination are:

Latin.—Translation of "unseen" passages. Latin into English, English into Latin.

French or German.—Translation of "unseen" passages. French or German into English, English into French or German.

Chemistry, Pharmacy, and Botany.—A three hours' paper dealing with these subjects in their relation to the British Pharmacopoeia. The questions will be based upon an elementary knowledge of the principal chemicals, drugs, and processes of the British Pharmacopoeia such as a student may reasonably be expected to have acquired during apprenticeship.

THE MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP is open to student-associates of the Pharmaceutical Society who have been engaged for not less than three years

in the pharmacy of a pharmaceutical chemist or a chemist and druggist in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. It has an annual value of about 26*l.*, which is spent in paying for school tuition. The other conditions of entry and competition are similar to those of the Bell Scholarship, except that the age limit is not less than nineteen or more than twenty-one. The winner of this scholarship may study in any provincial school of pharmacy or in the Society's school. The scholarship frequently goes a-begging.

FAIRCHILD SCHOLARSHIP AND PRIZES.—One scholarship of 50*l.* and four prizes of 5*l.* each are awarded annually by a Committee of Trustees on behalf of the donors, Messrs. Fairchild Bros. & Foster, London and New York. The awards are open to any registered student of pharmacy in the United Kingdom, between the ages of twenty and twenty-two, who has fulfilled the conditions of entry for the Minor examination of the Pharmaceutical Society of Great Britain or the Licence examination of the Irish Society. The examination comprises written papers in elementary chemistry, elementary materia medica, practical pharmacy, prescription-reading, and elementary business knowledge. The candidate obtaining the highest aggregate number of marks is awarded the scholarship, and out of it he must pay school-fees for not less than three months at any scholastic institution he may select to enable him to prepare for the Minor examination of Great Britain or the Licence examination of Ireland. Any of the money not used in this manner is paid to the student for maintenance. The prizes of 5*l.* are awarded to the best students in England, Wales, Scotland, and Ireland. The questions set in this year's examination were printed in the Coloured Supplement of *THE CHEMIST AND DRUGGIST* of July 1, and the results were given in our issue of July 29 (index folio 147). The examination syllabus can be obtained from Mr. A. E. Holden, Secretary, Albert Chambers, 64 and 65 Holborn Viaduct, London, E.C., with whom entries must be made for the next examination before June 1, 1912. The candidates may be examined at any of the following centres—Cardiff, Dublin, Edinburgh, London, and Manchester—at which the examination is held in June.

"CORNER FOR STUDENTS" PRIZES.—*THE CHEMIST AND DRUGGIST* founded these competitions for students in 1868, and many competitors have testified in these columns to their great utility. Exercises in qualitative chemical analysis are provided, for which two book prizes are offered monthly. A tournament is conducted throughout the winter session, the marks each month being registered, and the three competitors who receive the highest number are awarded parchment certificates and book prizes to the value of 2*l.* 2*s.*, 1*l.* 1*s.*, and 10*s.* 6*d.* Prizes are also awarded to any student whom the conductor of the "Corner," Dr. Leonard Dobbin, judges to have made meritorious progress.

HERBARIUM PRIZES.—The Pharmaceutical Society of Great Britain offers medals and certificates to its student-associates for a herbarium of British plants collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between January 1 in one year and July 1 in the year following. The collection must not exceed 150 specimens, which must be selected and mounted to display the characteristic features of the more prominent and typical genera of the chief British natural orders. Particulars can be obtained from Mr. Bremridge, 17 Bloomsbury Square, London, W.C.

Messrs. Potter & Clarke, Ltd., Artillery Row, London, offer annually silver and bronze medals for competition among apprentices in the retail drug-trade for a collection of medicinal plants, not exceeding twenty-four, gathered, dried, mounted, and named by such apprentices. The plants may be gathered at any time of the year before June 30.

THE ABERDEEN PHARMACEUTICAL ASSOCIATION offers to local apprentices a scholarship for attendance at the pharmaceutical classes at the School of Pharmacy of Robert Gordon's Technical College. Particulars can be had on application to the Secretary of the Association, Mr. W. F. Hay, 29 Rose Street, Aberdeen.

BOWMAN PRIZES.—Six book prizes, of an aggregate value of 10*l.*, presented by Mr. W. P. Bowman, are offered annually by the Leeds Chemists' Association. The questions are in chemistry and pharmacy, and are in two sets—one for juniors and the other for seniors. The syllabus is obtainable from Mr. J. R. Bentley, Hon. Secretary, 85 Kirkgate, Leeds, with whom entries must be made before March 1.

THE EDINBURGH ASSISTANTS' ASSOCIATION offers several prizes for competition among its members only, including a ticket for attendance at chemistry classes and prizes for botany.

Post-Graduate Awards.

The pharmacist is generally not eligible for the above-mentioned awards, but those given below are awarded subsequent to the qualifying examination.

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN offers annually three medals for competition by pharmaceutical

chemists who have passed the Major examination during the year. The examination is in materia medica, botany, and chemistry, and is held shortly after the Major examination in April. The Registrar communicates with each person entitled to compete, advising him of the matter. The first prize is the Pereira Silver Medal and 5*l.* worth of books; second, the Society's Silver Medal; third, the Society's Bronze Medal.

The Society also has in its gift the following scholarships:

The Redwood Scholarship, of the value of about 60*l.* in cash, which is awarded every second year to a pharmaceutical chemist, and enables him to work in the Society's research laboratory.

The Burroughs Scholarship of 60*l.* is a similar award every second year.

The Salters' Research Fellowship in chemistry, of the annual value of 100*l.*, is awarded for a similar purpose.

THE PHARMACEUTICAL SOCIETY OF IRELAND.—The Council awards annually a gold and silver medal to pharmaceutical chemists who have during the year passed the Licence examination and obtained the following standards of marks: For the gold medal, not less than 240 marks out of 300, and sixty-five in each of the three subjects; for the silver medal, 230 marks out of 300, and sixty in each of the three subjects.

THE HEWLETT MEMORIAL EXHIBITION is awarded on the recommendation of the Professors of the Pharmaceutical Society's School to the student (other than a Bell scholar) who is most successful in the examination for the school prizes in the elementary course. The exhibition is about 15*l.* in value, and it pays the fees of the successful candidate for the advanced or Major course.

THE KINNINMONT PRIZE, awarded annually, is open to pharmacists residing in Glasgow and the West of Scotland who have passed the Minor at any time from October two years preceding the date of examination. The examination, which is in elementary botany and physics, is held in Glasgow in January. The Hon. Secretary is Mr. W. L. Currie, 223 Byres Road, Dowanhill, Glasgow.

A POST-GRADUATE COURSE OF LECTURES for pharmaceutical chemists is being arranged by Professor A. W. Crossley, F.R.S., Dean of the School of Pharmacy, 17 Bloomsbury Square, London, W.C. A general outline of the idea was given by Professor Crossley at a dinner to Mr. Samuel W. Fairchild, of New York (*C. & D.*, May 23, 1911). It is proposed that the lectures should be in advanced pharmacy by some distinguished men. A committee, consisting of the President of the Pharmaceutical Society, Professor Crossley, Professor Greenish, and Mr. A. E. Holden, is considering the arrangements.

APPOINTMENTS.

Dispensers.

METROPOLITAN ASYLUMS BOARD.—The salary paid by the Board for the post of dispenser is 100*l.* per annum, rising by annual increments of 5*l.* to 130*l.*, with dinner and tea daily.

ARMY DISPENSERS are non-commissioned officers in the Royal Army Medical Corps. Candidates must enlist in the Corps in the usual manner, and, unless in possession of a recognised civil certificate (such as the Minor certificate), he must qualify according to instructions contained in the standing orders for the R.A.M.C. The would-be Army compounder must work up to the position which entitles him to enter for the examination. In larger hospitals practically all non-commissioned officers of the rank of sergeant and upwards are dispensers.

BOARDS OF GUARDIANS.—Poor-law dispenserships under the Local Government Board of England are open to those who hold certificates as Licentiates of the Society of Apothecaries, London; apothecaries' assistants (under the English Act); Army compounders; chemists and druggists (G.B.), or pharmaceutical chemists (Ireland). Salaries begin at 120*l.*, and can be increased by 20*l.* after four years, and then by biennial increments of 10*l.* until a maximum of 180*l.* a year is reached in the metropolitan area. In the provinces there is no fixed limit, the salary being fixed and varied by the Guardians of each Union, with the sanction of the Local Government Board. Dispensers receive pensions on retirement through age or ill-health, a deduction from the salaries being made in respect to this arrangement.

NAVAL HOSPITALS.—There are nineteen berths for dispensers at home and abroad, as follows: Haslar, six (including supernumerary appointment); Plymouth, four; Chatham, four; Haulbowline, Malta, Gibraltar, Hong Kong, and Portland, one each. Candidates for vacancies (which are advertised as they occur) must be chemists and druggists or pharmaceutical chemists, and not more than twenty-eight years old. The pay commences at 110*l.* per annum, with biennial increments of 5*l.* until 130*l.*, then by 10*l.* every two years to 230*l.* Additional allowances of from 20*l.* to 40*l.* a year are made to dispensers in charge of stores; 20*l.* is also allowed to the dispensers instructing the Sick-berth Staff at Haslar and

Plymouth. Free quarters are provided, and allowances made to those serving on foreign stations to meet the increased cost of living. Pensions are granted on retiring. Entry into the Service is by examination, conducted by the Civil Service Commissioners, but the candidates are first selected by the Medical Department of the Navy, Admiralty, S.W., to the Director-General of which Department applications respecting vacancies and nominations should be addressed.

PRISON SERVICE.—The regulations for compounders in English and Welsh prisons admit applicants between the ages of twenty-four and thirty-five years, inclusive. Candidates must hold a qualification of the Pharmaceutical Society of Great Britain, and must satisfy the Civil Service Commissioners as to their abilities in reading, writing, orthography, and arithmetic. The duties consist of dispensing medicines, assisting in keeping medical records, keeping medical and surgical instruments in order, assisting in the performance of surgical operations, doing the duties of hospital warder when necessary, and keeping the dispensary and its stores. The scale of remuneration is 105*l.* per annum, rising by 2*l.* per annum to 125*l.*, then by 5*l.* per annum to 150*l.*, with quarters, or 15*l.* 12*s.* per annum in lieu thereof. An application-form for appointment to the subordinate staff in the prison service has first to be obtained from the Secretary of the Civil Service Commission, Burlington Gardens, London, W.

Analysts.

The following appointments, mainly for analytical purposes, are held by persons who have specialised in certain directions.

THE ADMIRALTY, Whitehall, London, S.W., employs several chemists at Portsmouth, and as inspectors of victualling-stores at Deptford, Gosport, and Plymouth.

AGRICULTURAL ANALYSTS are appointed by County Councils under the Fertilisers and Feeding-stuffs Act, subject to the approval of the Board of Agriculture.

THE WAR OFFICE, Whitehall, S.W.—The Civil Service Commission publishes the regulations for examination for assistant chemists in the Department of the War Office Chemist at Woolwich. Age-limit, twenty to twenty-five.

THE PATENT OFFICE, Southampton Buildings, London, W.C., appoints examiners of patents, and some of these need to be chemists. Particulars of the open competitive examinations are obtainable from the Civil Service Commission, Burlington Gardens, London, W. Age-limit, twenty to twenty-five.

THE METROPOLITAN WATER BOARD, 20 Nottingham Place, London, W.—All the appointments upon the chemical and bacteriological staff of the Board's laboratory have been made up to the present as the result of public advertisement, but vacancies will usually be filled by promotion if there is a suitable applicant in one of the Board's departments.

GOVERNMENT LABORATORY CHEMISTS have in the past usually entered the Government Laboratory through the Inland Revenue Customs Department, from which temporary assistants are selected by examination; but changes are likely in the near future, as the Laboratory Inquiry Committee has recommended that the laboratory staff be recruited from persons who have received a collegiate training in chemistry. (For particulars see *C. & D.*, 1911, I, index folio 82.) The entry to the latter Department is by examination (age-limit, nineteen to twenty-two), particulars of which can be obtained from the Secretary of the Civil Service Commission, Burlington Gardens, London, W.

GAS EXAMINERS are appointed by public authorities to make independent examination of gas-supplies. In the provinces local professional chemists are usually appointed. The London County Council examines applicants for gas-testing appointments. The successful candidate is then appointed for relieving work, and permanent appointments are made by seniority. Some gasworks employ chemists to take the analytical control of the manufacture of gas.

BOOKS FOR THE STUDENT.

Text-books form almost an essential addendum to modern curricula. In the following brief note, books that have been found useful by actual experience in the study of pharmacy and its allied subjects are given, with an indication of their uses.

BOTANY.—For beginners, Farmer's "Practical Introduction to the Study of Botany" (Longmans), 2*s.* 6*d.*, J. W. Oliver's (Birmingham) "Elementary Botany" (Blackie), 2*s.*, and Edmonds' "Elementary Botany" (Longmans), 2*s.* 6*d.* For Minor students, Lowson's "Text-book of Botany" (Clive), 6*s.* 6*d.*, and Scott's "Introduction to Structural Botany," Part 1 (flowering plants), 3*s.* 6*d.* For Major students, Scott's "Introduction to Structural Botany," Part 2 (flowerless plants) (Black), 3*s.* 6*d.*, Green's "Manual of Botany," Vol. I., Morphology and Anatomy, Vol. II., Classification and Physiology (Churchill), 7*s.* 6*d.* and 10*s.*, and Vine's "Student's Text-book of Botany" (Sonnenschein). Classification, for beginners, Buckley's "Botanical Tables for the use of Junior Students" (Macmillan), 1*s.* 6*d.*, and Holmes's "Botanical Note-book" (Christy), 3*s.* More complete works are

Bentham and Hooker's "Handbook of British Flora" (Reeve), 10*s.*, and Willis's "Flowering-plants and Ferns" (Cambridge Press), 2 vols., 10*s.* 6*d.* Physiology, Green's "Soluble Ferments and Fermentation" (Cambridge Press), 10*s.* 6*d.*, and "Introduction to Physiology" (Churchill), 10*s.* 6*d.* Field botany, Hayward's "Botanist's Pocket-book" (Bell), 4*s.* 6*d.* Practical work, Bower and Gwynne-Vaughan's "Practical Botany for Beginners" (Macmillan), 3*s.* 6*d.*

CHEMISTRY.—Atfield's "Chemistry" (Gurney & Jackson), 15*s.*, and Newth's "Inorganic Chemistry" (Longmans), 6*s.* 6*d.*, are favourite text-books with pharmaceutical students. Organic chemistry, Perkin and Kipping's "Organic Chemistry" (Chambers), 6*s.* 6*d.*, or Cohen's "Theoretical Organic Chemistry" (Macmillan), 6*s.*, Bernthsen's "Organic Chemistry" (Blackie), 7*s.* 6*d.*, and Keane's "Modern Organic Chemistry" (Scott), 6*s.* For advanced students, Bloxam's "Chemistry, Inorganic and Organic" (Churchill), 18*s.*, and Stewart's "Recent Advances in Organic Chemistry" (Longmans), 7*s.* 6*d.* Standard reference work on organic compounds is Richter's "Chemistry of the Carbon Compounds" (Kegan Paul), Vol. I., Aliphatic Series, 14*s.*, Vol. II., Hetero- and Carbo-cyclic Series, 15*s.* Practical preparation of organic substances, Cohen's "Practical Organic Chemistry for Advanced Students" (Macmillan), 3*s.* 6*d.*, and Sudborough and James's "Practical Organic Chemistry" (Blackie), 5*s.* Physical chemistry, Walker's "Introduction to Physical Chemistry" (Macmillan), 10*s.*, and Senter's "Outlines of Physical Chemistry" (Methuen), 3*s.* 6*d.*

ANALYTICAL CHEMISTRY.—Muter's "Analytical Chemistry" (Baillière), 6*s.* 6*d.*, Newth's "Practical Chemistry" (Longmans), 2*s.* 6*d.*, Perkin's "Qualitative Analysis" (Longmans), 3*s.* 6*d.*, and Clowes and Coleman's "Elementary Practical Chemistry"—Part II., Chemical Analysis—(Churchill), 3*s.* 6*d.*, are good treatises on qualitative testing. Organic analysis, Weston's "Scheme for the Detection of the more Common Classes of Carbon Compounds" (Longmans), 2*s.* Quantitative analysis, Clowes and Coleman's "Quantitative Chemical Analysis" (Churchill), 10*s.* Volumetric work, Sutton's "Systematic Handbook of Volumetric Analysis" (Churchill), 21*s.* net. Pharmaceutical testing and urine-analysis, Proctor's "Pharmaceutical Testing" (*C. & D. Office*), 2*s.* 6*d.*, and "Practical Methods of Urine-analysis" (*C. & D. Office*), 2*s.* 6*d.*

LATIN AND PRESCRIPTION-READING.—Ince's "Latin Grammar of Pharmacy" (Baillière), 5*s.*, and Bennett's "Medical and Pharmaceutical Latin for Students of Pharmacy and Medicine" (Churchill), 6*s.*

MATERIA MEDICA.—Greenish's "Introduction to Materia Medica" (Churchill), 15*s.*, Southall's "Organic Materia Medica" (Churchill), 7*s.* 6*d.*, and Humphrey's "Materia Medica" (Kimpton), 6*s.* 6*d.* Flückiger and Hanbury's "Pharmacographia" (Macmillan), 21*s.*, is mainly of historical value. For practical microscopical work, Greenish's "Microscopic Examination of Food and Drugs" (Churchill), 10*s.* 6*d.*, and Kraemer's "Botany and Pharmacognosy" (Lippincott), 21*s.*

PHARMACY.—B.P. study, British Pharmacopœia, 1898 (Spottiswoode), 10*s.* 6*d.*, and White and Humphrey's "Pharmacopœia" (Kimpton), 10*s.* Practical pharmacy, Ince's "Elementary Dispensing Practice" (*C. & D. Office*), 3*s.* 6*d.*, "The Art of Dispensing" (*C. & D. Office*), 6*s.*, and Lucas's "Practical Pharmacy" (Churchill), 12*s.* 6*d.*

PHYSICS.—Glazebrook's "Heat and Light" (Cambridge Press), 5*s.*, Professor S. P. Thompson's "Electricity and Magnetism" (Macmillan), 4*s.* 6*d.*, Edser's "Heat for Advanced Students" (Macmillan), 4*s.* 6*d.*, Stewart's "Light" and "Heat" (Clive), 4*s.* 6*d.* and 6*s.* 6*d.*, respectively. Poyser's "Advanced Magnetism and Electricity" (Longmans), 4*s.* 6*d.*, and Ganot's "Physics" (Macmillan), 15*s.*

OTHER BOOKS.—Dobbin's "Arithmetical Exercises in Chemistry" (Thin), 1*s.*, for exercise in calculations. Martindale's "Extra Pharmacopœia" (Lewis), 10*s.* 6*d.*, and Squire's "Companion" and "Pocket Companion" to the British Pharmacopœia (Churchill), 12*s.* 6*d.* and 7*s.* 6*d.*, for reference. For doses, "The *C. & D.* Dose Tables for Pharmacy Students" (*C. & D. Office*), 3*d.*, and Gadd's "Synopsis of the British Pharmacopœia" (Baillière), 1*s.* Also Mr. Gadd's "Poisons and Pharmacy Act, 1908" (Baillière), 1*s.*

CHINESE QUICKSILVER.—In an official memorandum on Chinese mines the following occurs: The cinnabar mines at Yuan-shan-chiang, fifteen miles from Lung Chi Kow, in Kueichow province, [Yunnan.] A concession to work these mines was acquired by a syndicate called the Anglo-French Quicksilver and Mining Concession (Kueichow Province) of China, Ltd., in 1893, but owing to difficulties with the Chinese authorities little progress has been made with the development of the properties, which include iron-smelting works at Tsingki, Eastern Kueichow, and various mining rights in the same province. Samples of the Yuan-shan-chiang ore assayed by an expert give a maximum of 4.4 per cent. mercury and a minimum of 1.7 per cent.; average of assays 2.78 per cent. mercury. Average estimated daily output of mines, 150 tons (of 2,204 lb.).

TRADE REPORT.

The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers receive the goods into stock, after which much expense may be incurred in garbling and the like. Qualities of chemicals, drugs, oils, and many other commodities vary greatly, and higher prices than those here quoted are charged for selected qualities of natural products even in bulk quantities. Retail buyers cannot, therefore, for these and other reasons, expect to purchase at the prices quoted here.

42¹/₂ Cannon Street, London, E.C., August 10.

THE London dock strike and other sectional labour troubles connected therewith have brought the trade of the Port to a standstill this week, but it is the general opinion that an early settlement will be effected. This, added to the fact that many principals are on holiday, has rendered business on greatly restricted lines. The market changes in the interval have been few and mostly unimportant. In drugs old-crop chamomiles show a hardening tendency in the absence of offers of new. Chireita is easier. Senega and hydrastis are firm, and high prices are asked for taraxacum and valerian. Crude camphor is arriving more freely. Benzols are firm and ammonia sulphate dearer. Copper sulphate is unaltered. Turpentine firmer and shellac idle. In essential oils bergamot and lemon oils are firm, while Sicilian sweet orange is firmer. Star anise is scarce on the spot and Ceylon citronella is maintained at recent firmer rates. English peppermint oil is yielding badly, and a further advance has taken place in American oil. Clove-oil remains firm.

Cablegram.

NEW YORK, August 10:—Business in drugs is fair. Opium has advanced to \$8 per lb., and the alkaloids follow by an advance of 50c. Peppermint oil in tins is firm at \$2.90 per lb. Hydrastis (golden seal) is nominal at \$4. Senega is steady at 52c., copaiba balsam is quiet at 39c., and cascara sagrada is steady at 9¹/₂c. per lb.

London Markets.

ANISE OIL, STAR.—For August-September shipment, business is reported in "Red Ship" brand at 4s. 4¹/₂d. per lb. c.i.f.; spot is scarce.

BENZOLS are firm, 50-per-cent. in casks offering at 9¹/₂d. per gal. for prompt and at 9¹/₂d. to 9³/₄d. for 90-per-cent. in London.

BERGAMOT OIL is firm and unaltered, from 20s. 6d. to 21s. c.i.f. being quoted.

CAMPHOR.—The *Atsuta Maru* has brought 325 cases crude from Kobe and 390 cases crude from Keelung.

CARDAMOMS.—The explanation of the large quantity of cardamoms shipped from Ceylon this year (says the "Ceylon Observer") is that a large balance of crop 1910 was carried forward to 1911, and the dry or favourable weather for curing this product has almost effected a clearance of all the crop gathered up to and including at least half of May crop. The shipments of Ceylon-grown cardamoms will be very small until November, as a large percentage of the blossoms during the past four months failed to fructify. The exports from the island during the period January 1 to July 17 amounted to 385,031 lb., against 416,560 lb. in 1910, 373,019 lb. in 1909, and 344,387 lb. in 1908. The principal destinations this year have been: United Kingdom, 193,125 lb. (1910, 155,310 lb.); India, 52,212 lb. (1910, 147,981 lb.); Germany, 2,824 lb. (1910, 1,410 lb.); and the United States, 3,181 lb. (1910, 651 lb.).

CHAMOMILES.—In several directions agents are unable to offer new crop, and as the result of drought it looks as if there will be an exceedingly small yield. Meanwhile

old flowers are appreciating in price, with spot sellers at from 65s. to 70s. as to quality.

CHIRETTA.—There is a limited quantity on offer from second-hands, for which 9d. per lb. is wanted.

CINCHONA.—The auction to be held at Amsterdam on August 24 will consist of 12,754 packages, comprising 11,106 packages Ledgeriana and Hybrid, 858 cases Succirubra, and 790 bales Succirubra, making a total of 12,754 packages, weighing about 1,154,000 kilos. The first-hand stock at Amsterdam on August 3 consisted of 5,686 packages Government and 20,720 packages private bark, including the first-hand lots to be offered at the above-mentioned auction. The shipments of bark from Java to Europe during July amounted to 942,000 Amst. lb., and for the eight months (January-July) the total is 8,805,000 Amst. lb., against 10,370,000 Amst. lb. in 1910, 8,245,000 Amst. lb. in 1909, and 8,826,000 Amst. lb. in 1908. The *Sargasso* from Lisbon has brought 99 bales West African bark.

CLOVE OIL remains firm at last week's advance to 4s. 9d. for English, and at 4s. 7d. for quantity.

CLOVES are firm but quiet, fair Zanzibar offering on the spot at 8¹/₂d.; June-August and July-September delivery offer at 8¹/₂d. nominal, and August-October shipment at 6³/₄d. c.i.f.

COD-LIVER OIL.—Our Bergen correspondent writes on August 10 that the market is firmer; finest non-congealing Lofoten oil has been sold at 112s. 6d. per barrel c.i.f. The exports from Norway up to the end of July amount to 19,000 barrels against 17,500 barrels at the same time of 1910. In London prices for finest brands range from 110s. to 115s. c.i.f. with rather more inquiry.

COPPER SULPHATE is unchanged, ordinary Liverpool brands offering at 19l. 10s. for either prompt or spring delivery.

CREAM OF TARTAR is quiet but steady at 93s. for 98-per-cent. powder, and 91s. for 95-per-cent.

CUBEBES.—The *Atsuta Maru* has brought 33 bags from Singapore.

ELEM.—An arrival of 102 cases is reported from Manila per *Atsuta Maru*.

GINGER.—It may have been thought that as the result of the demand for summer beverages the price of ginger would have improved, but such is not the case, as the stocks are heavy, the weekly statistics of Cochinchina description showing 16,782 bags and 996 cases as compared with 10,192 bags and 969 cases at the same time last year.

HYDRASTIS.—Practically unobtainable on the spot at the moment, and for the few pounds offered, the fancy prices of 18s. to 20s. per lb. is asked, and for shipment it is probable 16s. 6d. c.i.f. would be accepted.

LEMON OIL.—Quotations continue to show a wide variation at from 6s. to 6s. 8d. per lb. c.i.f. according to shipper.

A Palermo advice dated August 5 states that trade has not been very active since last report. In the early part of the week some parcels changed hands at full prices, but during the last few days local buyers have held aloof. The position remains unaltered, as the available supply is small and firmly held, sellers asking full values or even an advance when they are approached by buyers.

MENTHOL.—Sales of Kobayashi for August-September shipment are reported at 14s. 9d., and oil for September-October shipment at 5s. 9d. c.i.f.; the spot value is 16s. 6d.

MORPHINE is unaltered, at last week's advance rates of 10s. 6d. to 11s. for hydrochloride powder.

OPIMUM.—There is practically nothing new to report this week, business on this market having been at a standstill. From Smyrna, sellers cabled 25s. 3d. as the price for 11¹/₂ per cent., but subsequently 26s. was asked for this test, which price may be regarded as nominal, as buyers hold aloof. There are buyers of Persian at 20s. to 20s. 6d. on the spot, but no sellers.

Writing on July 28, a Smyrna correspondent states that the sales this week amount to 50 cases, comprising old extra-selected Karahissar at 24s. and new qualities of Karahissar at from 20s. 6d. to 21s. 6d. per lb. The crop is generally estimated now to be under 3,000 cases, and many think it will not exceed 2,500, including Salonica. The near-future idea as regards price is in favour of a still more pronounced

advance—viz., 28s. to 30s. The arrivals amount to 245 cases, against 1,566 cases at the same date last year.

A Smyrna correspondent writes on July 31 that the week has been active, sales amounting to 9 cases new t.q. opium at piastres 187 to 191, or equal to 20s. 6d. to 20s. 10d., and 56 cases old extra Karahissar at piastres 205 to 213, or equal to 22s. 3d. to 23s. 2d. per lb. c.i.f. European ports for export. The arrivals amount to 245 cases, against 1,566 cases last year at the same date. It will be observed that our predictions that opium would rise to unprecedented prices have been verified. This morning an English buyer paid piastres 217 for old Karahissar, and shortly after this sale new buyers on a larger scale were obliged to pay piastres 225, or 25s., for some fifty cases. While we write holders refuse to part with further quantities at this price.

Another Smyrna correspondent writes on August 4 that the week has been more active, 88 cases having been sold for export, comprising 47 cases old Karahissar t.q. at from 24s. to 25s. 2d., and 41 cases new Karahissar t.q. at from 23s. to 23s. 7d. The arrivals amount to 309 cases, against 1,558 cases. Market closes firm with a rising tendency, due to the reports of considerable orders awaiting execution.

The British Acting Consul-General at Smyrna has furnished, under date of July 17, the following particulars relative to the opium crop of Turkey: "The crop of opium in 1910 was the largest on record, reaching nearly 11,000 cases (of about 168 lb.) for the whole of Turkey, and in quality it was decidedly the best ever raised, the percentage of morphine in ordinary 'druggists' qualities averaging very nearly 12 per cent. The demand was steady throughout the year for all parts of the world, Japan taking 500 to 1,000 cases. The market opened in July 1910 at 10s. 9d. per lb. and gradually advanced to 21s. 6d., at which price it closed on June 30, 1911. Of the whole production only about 950 cases remain on the primary markets. The 1911 crop promises to be but a small one, owing to the severe frosts during the winter months. Moreover, the crop in Persia is also reported to be very short. The total crop in Turkey is estimated at 3,350 cases (about 562,800 lb.). The qualities so far are poorer by one degree than last year, and in some instances it is found that there is as much as $1\frac{1}{2}$ to $1\frac{1}{2}$ per cent. of morphine in the moist state less than last year at the same period."

ORANGE OIL.—Advices from primary sources intimate that the supply is small and prices firmer again; for shipment *sweet* is quoted 8s. 1d. per lb. c.i.f.

OTTO OF ROSE.—For guaranteed genuine new-crop otto, it is estimated that the price this season will be about 50s. per English oz., so that the quotations will range from about 42s. to 50s. per English oz., the latter price being quoted by one agent who has a stock of old crop of "finest guaranteed pure."

PEPPER is dearer, fair Singapore offering on spot at 5d.; for arrival August-October and September-November shipment sold at 5d., and January-March $5\frac{1}{2}$ d. to 5 $\frac{1}{2}$ d. White pepper is also dearer, with buyers of fair Singapore at $7\frac{1}{2}$ d., and for arrival, September-November shipment has been sold at $7\frac{1}{2}$ d. to $7\frac{3}{4}$ d.

PEPPERMINT OIL.—American tin oil has further advanced on the news of the decreased crop-yield; prices for good brands range from 12s. 9d. to 13s. 3d. per lb., and in one quarter a bid of 12s. 6d. would be cable, but it is doubtful if it would be accepted. H.G.H. has also advanced, sellers asking 15s. 6d. London terms, with 15s. 3d. paid.

QUICKSILVER.—Firsts are unaltered at 9l. and seconds at 8l. 16s. per bottle.

QUININE.—There are a fair number of export inquiries in the market, and the market has, if anything, a firmer tendency. The usual German brands from second-hands are quoted at $7\frac{1}{2}$ d., Amsterdam at $7\frac{1}{2}$ d., and Java $6\frac{1}{2}$ d., the German makers quoting $7\frac{1}{2}$ d.

SENEGA.—Spot is firm at 2s. 4d. per lb. net, and to arrive 2s. $3\frac{1}{2}$ d. c.i.f. is quoted.

SHELLAC remains very quiet, fair standard TN orange offering at 63s., sellers of October-December shipment at 63s., and AC Garnet at 60s. c.i.f.

TARAXACUM.—For foreign, shippers are asking very high prices for the balance of last year's crop, up to 45s. c.i.f. being quoted.

TARTARIC ACID is steady at 1s. $1\frac{3}{4}$ d. for English, and 1s. $0\frac{3}{4}$ d. for foreign.

TONKA BEANS.—For a limited quantity of Angostura 21s. per lb. is asked in one quarter, while Para are not offered.

TURPENTINE is firm, and prices have advanced about 1s. per cwt., American closing at 37s. 9d. on the spot and for delivery during August.

VALERIAN is tending firmer as the result of drought; on the spot 33s. per cwt. is quoted.

Manchester Chemical Market.

August 8.

The holiday feeling in the cotton districts, combined with labour troubles, has again caused a limited demand for heavy chemicals; still, there is not much change in prices to note. Sulphate of copper is a shade quieter, and prices favour buyers, though 19l. 5s. to 19l. 10s. is asked for best brands delivered Manchester. Brown acetate of lime is weak, and 6l. per ton is a general quotation. Grey is exceedingly scarce at 10l. to 10l. 10s. per ton for American c.i.f. Naphthas have had a rather sharp advance on the week. Orders for miscible are difficult to negotiate at 2s. 10d., while as high as 3s. per gal. is spoken of, and solvent is obtainable in small quantities only at 2s. 10d. per gal. White powdered arsenic is quiet, even at the low prices ruling. Glycerin is also in slow inquiry; double-distilled is quoted in tins and cases at 108l. to 109l. per ton in 5-cwt. lots, and s.g. 1.260 naked, 105l. per ton in 5-ton lots. There is a good inquiry for coal-tar products, though the hot weather is limiting production. Sulphate of ammonia is quoted 13l. 15s. per ton on rails Manchester; creosote is $2\frac{1}{2}$ d. to $2\frac{3}{4}$ d. per gal.

Heavy Chemicals.

Business in the heavy-chemical market continues to take a normal course, and the tone of the market, generally speaking, is steady.

ALKALI PRODUCE.—Both the home and export demand is good, and prices do not show much alteration. Bleaching-powder in full demand; prompt, 4l. 15s. to 5l. for softwood casks free on rails, and 4l. 2s. 6d. to 4l. 7s. 6d. per ton on contract account. Caustic soda continues to move well for export at 10l. for 76 to 77 per cent., 9l. 5s. for 70 per cent., and 8l. 5s. for 60 per cent.; home-trade figures 7s. 6d. per ton more. Soda crystals, 50s. to 55s. per ton, in bags, free on rails. Ammonia alkali, 58 per cent., in steady demand; 4l. to 4l. 5s. per ton, in bags, free on rails. Saltcake in fair request, and steady at 42s. 6d. Bicarbonate of soda is moving better, and rules 5l. to 5l. 15s. per ton f.o.b., according to packages, etc. Chlorates of potash and soda continue steady at $3\frac{1}{2}$ d. to $3\frac{3}{4}$ d. per lb. Yellow prussiates of potash and soda, $4\frac{1}{2}$ d. and 3d. per lb. respectively. Hyposulphite of soda is on the firm and somewhat scarce side. Ordinary crystals in casks, 5l. to 5l. 10s. per ton, and deliveries in 1-cwt. kegs, 5l. 15s. to 7l. 15s. per ton, according to quality and quantity. Silicates of soda in average demand; 140° Tw., 4l. 7s. 6d. to 4l. 15s.; 100° Tw., 3l. 17s. 6d. to 4l. 5s.; and 75° Tw., 3l. 10s. to 3l. 17s. 6d. per ton, according to quality, quantity, and destination.

BARIUM PRODUCTS have latterly been in better all-round demand, and seem likely to continue. Prices are on the steady side, without fluctuations. Blanc fixe, pure precipitated barium sulphate in paste form, 6l. 10s. to 6l. 15s. per ton in usual 8 to 9 cwt. casks. Mineral sulphate of barytes, 35s. to 90s. per ton, according to quality, quantity, and package. Chloride of barium, best ordinary refined coarse or fine crystals, 6l. 5s. to 6l. 12s. 6d. per ton in 8 to 10 cwt. casks. Precipitated barium carbonate, 5l. 7s. 6d. to 6l. per ton in 2-cwt. bags. Crude calcined barium sulphide, 70 to 75 per cent. BaS, 5l. to 5l. 10s. per ton in ordinary 5 to 6 cwt. casks. Hydrate of barium crystals in 6 to 7 cwt. casks, 12l. 5s. to 13l. 5s. per ton. Fused barium hydrate, concentrated 56 to 60 per cent. BaO, solid product, in 6 to 7 cwt. drums, 13l. 10s. to 13l. 15s. per ton; and crushed, in 3 to 4 cwt. drums, 14l. 15s. to 15l. per ton.

Continental Drug and Chemical Markets.

FORMIC ACID.—The increased demand for preserving-purposes has not prevented again easier prices, although some weeks ago it was thought to have reached its lowest. Competition is keen, and 50-per-cent. wares have been sold at m.50 per 100 kilos., and even below.

GLYCERIN.—The demand at Marseilles for next year's deliveries has increased, and contracts were closed at 182.50f. for saponification qualities, although quantities were relatively small. There are buyers at 145f. for 80-per-cent. glycerin from lye, and at 180f. for saponification descriptions. Sellers show but little inclination to enter into new engagements, inasmuch as the high prices ruling for coconut and palm-kernel oil, which yield much glycerin, have compelled them to cover their needs in raw material by purchases of cheaper kinds of fats from which less glycerin is obtained. The market for near position, on the other hand, remains rather slow, and there are again very small lots offering on favourable terms, which suffice to encourage buyers further in their cautious policy. Inquiries are reported from Italy on the part of Paris brokers for contracts into the next three years,

prices varying between 180f. and 160f. Similar inquiries are heard of in various quarters. They do not seem to result in actual business, from which it is inferred that they emanate more or less from the same source. Crude glycerin unpacked, in buyer's casks f.o.b. to a suitable European port, for quantities not under 10,000 kilos., is quoted thus: Saponification qualities (88 per cent.), spot and 1911 delivery, 180f. to 187.50f., according to quality; deliveries 1912, 182.50f. to 185f. (less $\frac{3}{4}$ per cent. discount); glycerin from lye, spot and 1911 delivery, 150f. to 155f.; delivery 1912, 145f. to 150f. net or less $\frac{1}{2}$ per cent. discount respectively.

HUNGARIAN DRUGS.—The crop of chamomiles was relatively good and at the beginning of picking prices were rather depressed by frailer offers by growers. This, however, was merely temporary, for prices soon hardened again in consequence of a steady export demand and generally active buying. As the higher prices have been readily paid, stability is considered assured. *Linum-flowers* continue in active demand on moderate offers and prices now stand 10 to 15 per cent. higher than at this time last year. *Elder-flowers*, *poppy*, etc.—Trade in these plants is restricted owing to the small quantities coming to market, but prices are unaltered. *Alkanet*.—This root, used for colouring purposes, in which formerly a big trade was done, is getting scarcer year by year, only limited quantities being secured, partly through the cultivation of the Steppes, where the roots are dug, and partly owing to higher wages. Prices are advancing slowly but steadily and are easily realised where requirements arise. *Pepper*.—Crop prospects are very poor, the plant having severely suffered through the drought and flowering is deficient. Prices have lately risen smartly, and a further rise is certain to follow, as the stocks of the previous year are very low.

TARTARIC ACID is steady. For the time being it is cheaper to buy from second-hands than from makers. Spot (Hamburg) is offered at from m.235 to m.240 per 100 kilos.

The Dock Strike.

Since we wrote last week the commerce of the Port of London has come to a standstill as a result of the dock strike, it being estimated that, taking all sections of workers together, there were 70,000 idle on Wednesday. This condition of affairs has been brought about by the refusal of the dockers to resume work until the claims of all sections have been satisfied. It will be remembered that the men employed by the Port of London Authority obtained an advance of 1*d.* in their wages to 7*d.* per hour. Thereupon the outside men employed by the shipowners (who have always had 1*d.* more than the Authority men, owing to the temporary nature of the work) claimed an extra penny, making the wages 8*d.* per hour and 1*s.* per hour overtime. This was conceded in the award of Sir A. Rolit announced on Monday. Since then the coal-porters, watermen, lightermen, carmen, and stevedores have all put forward claims which are now being subject to arbitration by the Board of Trade. Meanwhile the Transport Workers' Federation, to which these workers are affiliated, have resolved that there shall be no more work done at the London Docks until all claims are met. The consequence is that trade is paralysed, and many branches of industry in the country and abroad are feeling the strain of the abrupt stoppage of the river traffic. The most serious feature is the stoppage of the distribution of food products, which is a matter of vital concern to everybody, and the possibilities of a food famine are being freely discussed. As regards the drug-trade, business is being carried on under great difficulty, as many of the carmen are on strike and goods cannot be collected or delivered. The railway companies have also notified their customers that they may be unable to collect goods, and that they cannot accept any more for shipment at the docks. All the available sidings at the docks are filled with loaded waggons, and the Port of London Authority refuses to allow any more trucks to be brought to the docks. As a result of the increased wages bill the Port of London Authority has announced that, "in consequence of the additional expenses entailed by the recent increase in wages, all the existing duties, rates, rents, and charges (other than river tonnage dues on vessels, river tolls, and port rates on goods) on vessels, lighters, and merchandise will, as from August 14, be increased by $7\frac{1}{2}$ per cent." This course has been taken pending the revision in detail of the several rate-books and tariffs. It is not likely, however, that this extra impost will remain on the shipowners, but will be a charge upon the commodities they handle, and will eventually be borne by the consumer.

English Peppermint and Lavender Crops.

Mr. Jesse Matthew, of Coulsdon, writes: "My crop of peppermint this year will be a very small one, a continued drought having prevented the growth of the leaf and spreading out of plants; consequently most plantations are thin. Prices will undoubtedly be well maintained, and should be

advanced to compensate growers. There is very little lavender under cultivation, but as prices continue to improve the acreage will be increased." Reports from some of Mr. Matthew's neighbours are as follows: "(1) Same acreage as last season, but crop will be quite half. Commenced cutting, as the leaf is going off badly with the blight. (2) Crop very thin; nothing compared to last. (3) Complains badly; will have only half the quantity of stills compared with last year. (4) Crop very thin in places, owing to plants having made little growth. (5) Says he is sorry there will be very little with a continued drought; it is almost dried up. And it is the same with his neighbour." "In conclusion, the total results of the distillation will lead to a considerably reduced output of oil. Reports have been circulated by interested persons on the Continent that the crop will be a good one, and I think such absurd rumours should be dispelled."

Messrs. J. & G. Miller write: "During the first week of August we made a tour of practically the whole of the farms and gardens producing peppermint, lavender, etc., throughout the whole of the Mitcham district, and have carefully inspected the crops.

LAVENDER looks well, the dry, hot weather having suited the plant, but scarcely any will be distilled for oil this season. The flowers will nearly all be sold in bunches on the London markets, so prices of the oil must rule higher.

PEPPERMINT.—The harvest is now in full swing; the greater part has already been cut, so if rain comes now it will be too late to save the crop; in fact, it will do the herb harm by washing out the oil. The amount of herb is the smallest of any year since 1893. The yield per still, we expect, will be good, but the yield per acre will be small; the total yield will be one of the smallest on record. The rainfall on the peppermint-fields in the Mitcham district from June 30 to August 9, a period of forty-one days, has been only about $\frac{1}{4}$ in. The sun also during this period has been excessively hot, so that it has scorched up the plants, leaving the amount of herb to be distilled very small. There is no old oil left in the growers' hands, so if the demand is up to the average, genuine Mitcham oil must be excessively dear before another harvest.

CHAMOMILES, owing to the extraordinary drought, will yield a very small amount of oil; so the prospect of the Mitcham herb-grower this season appears likely to be one of serious disappointment."

Messrs. W. H. Hobbs & Co., Ltd., write:

PEPPERMINT.—The cutting and distilling have now commenced, much in advance of usual time owing to the continued dry, sunny weather. The distilling had to be hastened on account of some of the lower leaves of the plants turning yellow and withered by the hot sunshine. The herb has not filled out at all well, and the number of stills per acre will certainly be less than usual, with a subsequent small total output. As far as can be gauged, prices will rule higher—somewhere about 32*s.* to 36*s.* per lb. The quality of the oil, we should say, will be above the average.

LAVENDER.—Although the value of English oil has risen considerably, it is still a moot point, however, if the current prices are remunerative, and whether it is not better to bunch the bloom and not trouble about the distillation. The exceedingly low prices that have hitherto ruled caused great reduction in acreage, and it will be some time before larger supplies are available.

Turpentine Oil.

The position of turpentine oil would now appear to be unduly depressed, which is doubtless partly accounted for by recent "bear" manipulation, encouraged by the want of resistance in the American market. There are a few dealers who are now of opinion that the time is perhaps near at hand when a fresh upward movement will be engineered. There is certainly not much risk for trade distributors and manufacturers, who have held aloof during the recent depression and exhausted their stocks, to proceed with a judicious replenishment pending further developments in the American situation, where quick changes of front have often been witnessed in this article. There are in the interim various arguments which can be adduced in favour of a rise after a depreciation of nearly 50 per cent. from the highest seen this year. The London visible supply (including a stock of about 16,000 barrels) is little over 23,000 barrels, or, roughly, 10,000 barrels more than when high-water mark was touched, but it is little more than a year ago when American spot turpentine sold at about 50*f.* per ton, or 12*f.* over the price lately ruling. The market, though not active, is sensitive, with but few sellers, while very little Spanish or French spirit is now offering at the current relatively low prices. Another consideration is that, in contrast to the time when American spirit stood at a prohibitive level, there is but little inducement to use the much inferior Russian spirit at about 31*f.*, compared with 38*f.* for the former, which is considered better value. The difference between the two is certainly very small.

July Trade.

The Board of Trade Returns for July show an increase of 1,690,048/, in imports and a decline of 3,780,541/, in exports, figures which are disappointing as compared with the progress shown during the first half of the year. The advance in imports was partly due to larger receipts of food, drink, and tobacco. Raw materials declined by 2,119,000/., about half of which is due to the decline in rubber, of which a much smaller quantity was imported. In manufactured products the increase was 1,558,000/., distributed over practically every scheduled item, including 6,211/, more for chemicals and the like, the imports reaching 918,226/. for the month. As regards exports, there was a decline of a general character of 3,075,510/. in manufactured goods, of which about one-third is attributed to cotton and woollen fabrics, and 727,000/. to iron and steel goods. Exports of chemicals, drugs, dyes, and colours were 260,042/. less, the month's figures being 1,263,749/.; of this amount 152,437/, represents drugs and medicines. Quinine exports were 224,151 oz., as against 157,561 oz., and of opium dried and powdered in the United Kingdom the exports were 10,894 lb., as against 573 lb. in July last year. Among the heavy-chemical group a satisfactory feature is the considerable increase in copper sulphate from 2,138 tons to 4,916 tons, and for the seven completed months of the year the total is now 69,741 tons, against 35,555 tons.

Sicilian Citrus Products.

Messrs. Giov. Boccadifuoco & Figli, of Syracuse, have issued a circular giving a forecast of the next lemon crop, in the course of which they state that "as the result of careful personal investigation in all the important districts they are of opinion that the crop of fruit now on the trees, taking a fair average, will prove to be nearly one-third less in quantity than last season. It may be recalled that the Italian Government Department of Agriculture, controlling the citrate industry, announced that the citrate production for the season ending May 1911 showed a falling off of about one-third as compared with the previous season ending May 1910. These official statistics are accepted as the most reliable guide we have to the actual lemon-oil production over the same period. It will therefore be seen that this fresh reduction in the crop which we are led to expect is rather serious. If the total quantity of lemon oil to be pressed in the coming season were to be reduced in proportion to the actual fruit crop, then very high values would certainly prevail. But we do not anticipate this, because, the present price of both lemon oil and citrate being already high, it is reasonable to assume that a larger quantity of lemons will be pressed for oil and citrate next season, while a smaller proportion of fresh lemons in cases will be shipped for auction markets. In this way the equilibrium should be maintained. It is a good many years since such a long and severe winter as last was experienced in Sicily, and, with two seasons in succession of comparative scarcity, it is not to be wondered at that much excitement should prevail among the numerous small growers and that many should have become the prey of speculators. In our opinion to-day's market values are somewhat artificial, but, based upon natural causes and results, we fully anticipate that lemon-oil consumers will have to look forward to a prolonged period of prices above normal.

Cinchona-testing Stations.

A cinchona-testing station is to be opened shortly in connection with the Java Government cinchona-plantations, and the following rules governing its working are published in a recent number of the "Javache Courant." The station will supply information regarding the cultivation of cinchona, the botany and chemistry of the crop, and entomology in its relation to cinchona. It will make analyses of bark at charges ranging from 5 to 7.5 florins, depending on the amount of information asked for. The work of the station will be carried out by the staff of the cinchona-plantations, and correspondence should be addressed to the Government Testing Station, Tjinjroewan. When an investigation requires that a Government officer shall travel, the extra cost involved will be charged to the inquirer. In managing the stations the Director of Agriculture will be advised by a small committee of three to five members, and one of these members will be nominated each year by the Director to look after the routine business of the station. The committee will meet at least twice a year, and issue a report in March of each year.

STRIKERS AND DRUGGISTS.—Carriers' vans sent out by wholesale druggists in London bore notices as follows, printed over a red cross: "Urgent.—Drugs for hospitals and chemists." Another had: "This van contains nothing but medicines." They were allowed to carry out their deliveries without interference.



Memoranda for Correspondents.

All communications must be accompanied by the names and addresses of the writers, otherwise they cannot be dealt with. Queries by subscribers on dispensing, legal, and miscellaneous subjects connected with the business are replied to in these columns if they are considered to be of general interest. Letters submitted for publication (if suitable) should be written on one side of the paper only. Their publication in "The Chemist and Druggist" does not imply Editorial agreement with the opinions expressed.

Dispensing Book-keeping.

SIR,—Mr. Dodsley's interesting article in the Summer Number of THE CHEMIST AND DRUGGIST calls attention to a department of the chemists' business well worth consideration. His D.R.B. (Dispensing Record Book) is a real necessity to any ordered business. I adopted a similar method many years ago, and found it a distinct commercial gain. Repeats of old mixtures can be got at easily, since the customer, as a general rule, can only recollect the last occasion when his order was made up. In cases where a drug-habit is in danger of being set up—say a "cocaine-paint," where the customer becomes sly enough to get served by a different assistant each time—the daily review of the D.R.B. shows it up, and I have been able on more than one occasion to call the doctor's attention to the abuse. The only difference in my entries from Mr. Dodsley's is perhaps that the detail is better put; it has the initials of the dispenser, the sign of Rpt. (repeat), and, where given, the address. These addresses are entered into a small indexed book, and are useful when sending out circulars or where an inaccurate address has been taken down. My style runs thus:

1911.				
Mond.				
July 31	Cameron, Miss, Woodlea.			
1/3 Pd.	Rpt. Lin.	14378		A. McK.
	Thomson, Master, 3 Walmer Rd.,			
	Mixture (2 bots.)	7843 }		
6d. }	Powders	7844 }		T. M.
	Innes, Wm., c/o Paterson.			
9d. Pd.	Rpt. Cachets (½ qty.)	1786		J. S.

Orders are taken on gummed slips, and a slip attached outside the parcel and containing a rough note of all the goods supplied, which is detached when the parcel is given out. This passes on to the book-keeper—in this case, myself—and all entries in the day-book are made by the one individual who checks the D.R.B. against the entry, marking the item "A/c." The cash-register is worked by the salesman, who rings up a charge or cash-entry as the case may be, the former ticket going into the till as a note of the transaction.

The prescription-book proper was originated by my old employer, who copied the idea from his tailor. It is now much used in Glasgow, with several modifications, and an account of it may interest. A long, narrow book, 5½ in. wide by 16 in. long, made of blue paper, each leaf ruled into five equal spaces, and each space numbered. A prescription into every division, unless very small, when it is subdivided, but only in the case where the recipes are for the same patient. The arrangement gives ten spaces in the opened book, and, what is more important, the same terminal number occurs always in the same position—i.e., the end-number 6 is always at the right-hand top space. This is most useful, since a partly obliterated number can be traced quickly, as only one portion of a page need be looked at. The book has 5,000 entries, is strongly bound with ledger index at front, and blocked on the back 30,001 to 35,000. It costs 12s. 6d., made to order. Every recipe is indexed, and where a particular prescription is much called for it is underlined thus:

Mist Haust. Inh. Cach. Ung. Pil. Collyr.
 Tilburn ... 30343, 70, 1, 546, 71, 88, 31333, etc.

I have used the typewriter for all my labels for over seven years now, and have no cause to repent. The first notice of its use I can find is in "The Art of Dispensing," but the only firm in Scotland for a long time who actually worked it were Messrs. Rankin & Borland, of Kilmarnock. They used violet copying-ink, and my objection was the liability of the ink to smear if the label got wet, and also to discolour if an alkaline mixture ran over it. After some experimenting, I found what suited my purpose best was the Yost machine with a "recording black" ink-pad. This ink does not run, and stands all the requirements well, even to sponging with benzene. A fair second-hand machine can be got for about 6*l.*, one that will stand shop usage and have the merit of little cost for upkeep. My machine is fourteen years old, and, pad included, has cost me under 8*s.* per annum. With this you can type a label down to $\frac{1}{16}$ in. from the bottom, and print the smallest label in ordinary dispensing work. Of course, some shapes of labels suit better than others. A wide label is best, since the lines must be judged by the eye for display, and the fewer the lines the better on this account. Some system of marks is necessary to identify the dispenser. Letters such as A and B before the number did not suit, as mixtures so labelled were frequently returned as "not the same number as the last, which was B270—this is A270." After some cogitation I hit upon an arrangement less conspicuous, dropping out the letter altogether, and using an arrangement of dash, dot, and comma—thus:

—4743—for 1st dispenser.
—4743. .. 2nd ..
—4743. .. 3rd ..

The advantages are many. It has a look of neatness that reflects credit upon the establishment—is an advertisement, in fact. The old lady who insists upon "himself" making up her particular prescription does not learn the

ARTHUR McKELLAR. Pharmaceutical Chemist,

One tablespoonful in half
a wineglass of water, as
directed.

Mrs Murray -34567-

6, KENSINGTON TERRACE, IBROX.
NEAR GLASGOW

habit, careless writing is done away with, and at all times the instructions can be clearly and quickly read. The objection has been raised that a number of labels get spoiled in the operation of typing. That is so; but labels are cheap enough, even at 2*s.* 6*d.* per 1,000 you can afford to waste a lot. My hands generally take about a week to learn how to operate; speed is not a necessity so long as a neat job results.

Summed up, the extra work of a proper system of recording prescription work is well compensated for by the smoothness and quickness resulting. Time is money, the public want smart service, and any aid to that end must result in improved efficiency and increased business.

Yours truly,

Ibrox.

A. McKELLAR.

SIR,—Pill labels are easily typed. If the upper edge of the label is just stuck on to a piece of paper and put through the typewriter in the usual manner, it can be pulled off while still moist, and stuck on to the pill-box. If the type is small enough this method is successful.

Pembroke Dock.

WM. HY. BOWLIN.

Bulgarian Otto of Rose.

SIR,—Referring to your remarks in last week's issue regarding otto of rose, I should like to state that the quotation of 61*s.* (which refers to otto of rose of Mr. D. Pappazoglou's own distillation) should read "per Turkish oz.," not "per English oz.," as printed. Attention should also be drawn to the great care which must be exercised in ob-

taining, repeating, and comparing prices of the otto. Is it possible that buyers are omitting to take into account whether a price named is per E. oz. or per T. oz.? If so, it should be pointed out that the difference is no longer 2*s.* or 3*s.* per oz. as it was when otto of rose was worth 20*s.* per oz. A Turkish oz. is equivalent to 32.055 grams, and an English oz. 28.35 grams, from which it will be seen that the proportion is roughly as 8 is to 7, or, to be more exact, as 7.92 is to 7—thus:

20 <i>s.</i>	per E. oz. is equivalent to	22 <i>s.</i> 7½ <i>d.</i>	per T. oz.
but 40 <i>s.</i>	"	45 <i>s.</i> 3 <i>a.</i>	"
50 <i>s.</i>	"	56 <i>s.</i> 6 <i>d.</i>	"
and 53 <i>s.</i> 11 <i>d.</i>	"	61 <i>s.</i>	"

If I add that my principal's price is subject to 2½ per cent. discount, it makes the quotation 52*s.* 7*d.*, so that 61*s.* per T. oz. is far from being out of the running. Coming to the question of the cause of the high prices ruling, you appear to be of the opinion that they are not entirely natural, basing your opinion largely on the export figures which have appeared after the crop had been announced to be very much smaller. Now, I would state that last year's crop was decidedly smaller than the figures you name, and, contrary to the supposition that the discrepancy cannot be entirely due to adulteration, would say that it is entirely due to adulteration, in spite of the guarantees of purity which are given with practically every parcel of otto of rose sold. Otto of rose is adulterated to the extent of 20, 40, and 60 per cent., and a good part of it comes into this country as well as going elsewhere. This year's crop is 2,600 kilos., including adulterated oil, and it will be interesting to see how much is exported when the statistics are published. I shall be surprised if it is under 3,500 kilos. I am afraid that our unwillingness always to face the fact that the crop is a bad one accounts for having to pay higher prices than we would otherwise have to pay, and for our getting worse otto than need be the case. My principal sums up the position of the market very forcibly as follows: "For some years past we have been having very bad crops, and any statements which try to prove that such advances are due to the dealers can only bring bitterness, suspicion, and decreased confidence between buyers and sellers." We shall have better crops again and see lower prices, but if prices are going to be 26*s.* to 30*s.*, or 16*s.* to 20*s.*, and whether we are going to have "decreased impurity" (there is no such thing as "increased purity"), depends entirely on what buyers are going to make their standard, whether the quality which is to-day offered at 61*s.* per T. oz. (equivalent to 53*s.* 11*d.* per E. oz.) or the rubbish which is always offered considerably below first cost. If the latter, Bulgarian exporters certainly have something to fear from makers of synthetic rose; if the former, nothing whatever.

Yours faithfully,

63 Bartholomew Close, E.C.

W. NAUMANN.

National Insurance Bill.

SIR,—I cannot honestly say that I like this Bill much better now than I did at first. It is a pleasant thought—in one way—to me that at the age to which I have arrived I am not likely to see much of the dispensing which is to accrue. I had some experience years ago of dispensing on terms somewhat similar, and, even if the remuneration were to be double that of the particular society I have in mind, it would not be, in my opinion, nearly enough to make the work a pleasure. I object to the compulsory nature of the Bill—i.e., many people outside the Friendly Societies invest largely in insurances, but they get no credit for that. The Bill starts with compulsion, and then the Health Committees, I assume, will have something to say about capitation grants. We may be sure that the incidence will be no higher than absolutely necessary: there will be no margin of profit for the chemist to play with, and I imagine that the chances of a rise in fees will be remarkably small. Unless the remuneration is sufficient to make the work a pleasure and profit, it is best left alone. I know what it is to see one's shop crammed to the doors night after night with people waiting for physic. It looks businesslike, but at the end of the day there is the feeling that there is little or nothing to show for the work done. It is forty-three years ago that

I was apprenticed to pharmacy, and I had high ideals. It all depends on one's point of view, of course, but I confess to disappointment. Finally, my advice is, open your mouths as wide as possible, and above all do not touch the work unless it will contribute its share to expenses.

Yours, etc.,

"SERE AND YELLOW."

The Dispensers' Qualification.

SIR, In regard to the qualification of dispensers under the National Insurance Bill, may I suggest that all persons should be recognised who have been engaged in dispensing for seven years for a medical man or with a chemist where dispensing was done for doctors before the passing of the Bill? I have no doubt that there are hundreds fixed similarly to myself. I served an apprenticeship of five years and have been an assistant for nine years, making altogether fourteen years' experience. I have not been a doctor's dispenser, but I am with a firm who send to three doctors daily for their prescriptions, and the medicines are dispensed by me at the shop. We also dispense for other doctors, besides having an average of about thirty prescriptions for private customers daily. Surely Mr. Glyn-Jones will not forget the toilers, and especially the poor ones? My hours are about seventy-five per week, and I cannot afford to qualify.

Yours faithfully,

AMICUS. (124/45.)

Legal Queries.

Consult the Legal Advice Section of "The Chemists' and Druggists Diary," 1911, p. 435, before writing about your difficulty.

Dry-rot (120 51) writes: "My shop is expensively fitted, but dry-rot has set in under my mahogany window-enclosures and tends to ruin them, as the wood is splitting. Twelve months ago the landlord put in a new floor, but did not alter the ventilation or creosote the new timber, and the thing has gone from bad to worse again. Can I hold the landlord responsible for my fittings? Is he entitled to make them good? This will be an expensive item to me, which means getting the cabinet-makers in." [Our subscriber does not say what the terms of his tenancy are, but we do not think he can compel his landlord to compensate him for the damage to the fittings. There will, however, be no harm in making a claim for the damage sustained.]

Subscriber (116 60) puts the following case: "What is the proper course to adopt under the following circumstances to get possession of the house? I let a house under agreement for three years with the usual clauses, including one for power of re-entry if a quarter's rent remains unpaid for thirty days after it falls due. The tenant comes to me and asks to be allowed to remain on six months after expiration of his term. This is agreed to by me in writing, subject to the conditions of the agreement, but there is nothing but verbal acquiescence on the part of the tenant, nothing in writing to constitute a contract. The original agreement terminates on June 24, and a quarter's rent is due and arrears of part of preceding quarter. In July the tenant sold his furniture, which was removed, locked up the house, and disappeared, leaving no address. What is the legal means of rescinding the permission to remain on and gaining possession of the premises if the tenant is not to be found?" [We are afraid that "Subscriber" has been tricked in this matter. The quickest way for "Subscriber" to obtain possession is to issue a writ in the High Court for arrears of rent and possession, and he will obtain an order in a very short time as compared with the process in the County Court.]

Miscellaneous Inquiries.

We do not as a rule repeat information given in this section during the past twelve months. When references are given to past issues, these should be consulted. Back numbers for the past five years can generally be obtained from our office at the published prices. We do not undertake to analyse and report upon proprietary articles.

R. O'M. (Johannesburg) (116/73).—COMPRESSED YEAST.—There is no book published on this subject, but in Jago's "Technology of Breadmaking" a few pages are devoted to the manufacture of compressed yeasts.

Compass (116/38).—COMPASS LIQUID.—As we stated a few weeks ago, we believe a 25-per-cent. solution of glycerin is generally employed as the liquid in ships' compasses.

J. C. (101/15).—ORANGE BITTERS.—The following formula is from an American source, and is possibly what your American customers desire:

Fresh orange-peel, chopped fine	2 lb.
Bitter orange-peel, coarsely powdered	1 lb.
Oil of orange	1 oz.
Cologne spirit	96 oz.
Water to make	128 oz.

Prepare by maceration and pressure, adding the essential oil to the filtered liquid. For bottling this is diluted as follows:

Stock tincture	8 oz.
Proof spirit	96 oz.
Glycerin	1 oz.
Water	32 oz.

Sperans (114/63).—ACCUMULATION OF DRUGS.—Digitalis, strychnine, mercury and lead salts, and potassium bromide are the principal drugs to which cumulative effects are attributed by therapeutists. We do not know of any complete list of such drugs.

Mizpah (111/11).—Boiling with a caustic alkali—*e.g.*, soda or potash—would render the rice-gluten soluble, but it may not in this form answer the purpose you have in view.

Perplexed (107/31).—We cannot say what causes the change in colour of the yellow sheep-dip, but it is probably the action of the alkali on the yellow dye—naphthol-yellow, for instance, is precipitated by alkalies. The aniline-dye dealer from whom you obtain the dye could probably suggest some other colouring-matter.

Health Salts (105/54).—The difference between the two samples of health salts seems to be mainly physical. We find on examining the samples that No. 2, which you find the bulkier, is in a much finer state of division than No. 1, which is sufficient to account for the difference you have observed. You should employ the finest powdered sugar for the purpose.

J. H. W. (104/7).—SARSAPARILLA-WINE.—As sold by herbalists, this appears to be made by adding soluble essence of sarsaparilla to water, with or without the addition of syrup. A good soluble essence of sarsaparilla may be made from the following recipe:

Conc. comp. decoction of sarsaparilla	3xij.
Oil of peppermint	℥x.
Oil of wintergreen	℥xij.
Oil of cloves	℥vj.
Rectified spirit	3v.
Water	3iij.

Dissolve the oils in the spirit and add to the water, previously mixed with a drachm of light carbonate of magnesium; filter and add to the sarsaparilla decoction.

Retrospect of Fifty Years Ago.

Reprinted from "The Chemist and Druggist," August 15, 1861.

The Apothecaries' Company.

Apothecaries' Hall, in Water-lane, opposite Union-street, Bridge-street, Blackfriars, was finished in the year 1670, and, according to Pennant, is "a large and handsome building"; but Malcolm describes it "of brick, without ornament, except a large arch entrance. The quadrangle is stuccoed, and the great room on the east side. It is very plain, with a small gallery at the north end." There are several portraits, including those of James I., Charles I., William and Mary, and a bust of Gideon de Laune, but the whole are poor attempts, and are much faded, the best being that of William Prowting, Esq., Master, 1773. Vast quantities of medicine are prepared at the hall, and retailed, in a shop adjoining, to the public at large. Mr. Timbs notes, that "on June 4, 1842, Mr. H. Hennell, the principal chemical operator to the Apothecaries' Company, met a terrific death in the laboratory yard, by the explosion of between five and six pounds of fulminating mercury, which he was manufacturing for the East India Company." The medicines for the army and navy are prepared here. The Dublin Guild was incorporated 1745. The Apothecaries' motto is "*Opiferaque per orbem ditor*" (I am said to be a help through the world), and they rank the fifty-eighth on the City Companies' list. The Master for the present year is John Hunter, Esq., Mr. William Buchanan and Mr. Charles W. Wheeler are the Wardens; Mr. R. B. Upton, Clerk.

